

UNITED STATES COURT OF FEDERAL CLAIMS

IN

LARRY GOLDEN v. THE UNITED STATES

CASE NUMBER: 1:23-cv-00811-EGB

Consolidated Claim Charts

[Pg.02] Exhibit A: Duplicate of Claim Chart submitted in *Golden v. Google LLC*

[Pg.12] Exhibit B: DoD DTRA ATAK Multi-Sensor Detection System—CBRN

[Pg.17] Exhibit C: Google, Apple, Samsung, LG, & Qualcomm Comparison

[Pg.31] Exhibit D: Google Pixel 5 and Apple iPhone 12 Comparison

[Pg.43] Exhibit E: Google Pixel 5 and Samsung Galaxy S21 Comparison

[Pg.52] Exhibit F: Google Pixel 5 and LG V60 ThinQ 5G Comparison

[Pg.61] Exhibit G: Google Pixel 5 and Asus-Qualcomm Comparison

[Pg.70] Exhibit H: Samsung Galaxy Book2 Pro 360 PC / Tablet

[Pg.77] Exhibit I: Hewlett Packard (HP) ZBook Fury G8 Mobile Workstation PC

Exhibit A

**DUPLICATE OF THE CLAIM CHART SUBMITTED IN
GOLDEN v. GOOGLE, LLC**

The Federal Circuit on 09/08/2022, in *Larry Golden v. Google LLC*; Case No. 22-1267 — “VACATED AND REMANDED” the relevant Case No: 22-1267 Document 15; back to the District Court “to be filed and request service of process”.


The Federal Circuit determined the complaint, “includes a detailed claim chart mapping features of an accused product, the Google Pixel 5 Smartphone, to independent claims from U.S. Patent Nos. 10,163,287, 9,589,439, and 9,069,189” ... “in a relatively straightforward manner” ... and that the [Circuit] “express no opinion as to the adequacy of the complaint or claim chart except that it is not facially frivolous.”

Three-Judge Panel: “DISCUSSION. ‘Under the pleading standards set forth in *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544 (2007), and *Ashcroft v. Iqbal*, 556 U.S. 662 (2009), a court must dismiss a complaint if it fails to allege “enough facts to state a claim to relief that is plausible on its face.” *Twombly*, 550 U.S. at 570 ... [T]his standard “requires more than labels and conclusions, and a formulaic recitation of the elements of a cause of action will not do.” *Id.* at 555 (citation omitted). A plaintiff must allege facts that give rise to “more than a sheer possibility that a defendant has acted unlawfully.” *Iqbal*, 556 U.S. at 678 (citation omitted) ... this court has explained that a plaintiff ... must plead ““enough fact[s] to raise a reasonable expectation that discovery will reveal’ that the defendant is liable for the misconduct alleged.”

“Mr. Golden’s complaint includes a detailed claim chart mapping features of an accused product, the Google Pixel 5 Smartphone, to independent claims from U.S. Patent Nos. 10,163,287, 9,589,439, and 9,069,189 ... It [claim chart] attempts [] to map claim limitations to infringing product features, and it does so in a relatively straightforward manner ...[W]e conclude that the district court’s decision in the Google case is not correct with respect to at least the three claims mapped out in the claim chart. Mr. Golden has made efforts to identify exactly how the accused products meet the limitations of his claims in this chart....”

CLAIM CHART FOR GOOGLE PRODUCTS

The following Claim Chart is an illustration of literal infringement. At least one of the alleged infringing products of Google (i.e., Google Pixel smartphones 4a, 4a(5G), 5, 6, 6a, 7, & 7a) are representative of all the alleged infringing products of Google asserted in this complaint. At least one of the alleged infringing products of Google (Google Pixel 5) is illustrated to show how the Google Pixel 5 allegedly infringes on at least one of the asserted independent claims of each of the patents-in-suit ('287, '439, and '189 patents).

Google Pixel 5 Smartphone	Patent #: 10,163,287; Independent Claim 5	Patent #: 9,589,439; Independent Claim 23	Patent #: 9,096,189; Independent Claim 1
	A monitoring device, comprising:	A cell phone comprising:	A communication device of at least one of a cell phone, a smart phone, a desktop, a handheld, a PDA, a laptop, or a computer terminal for monitoring products, interconnected to a product for communication therebetween, comprising:
CPU: Octa-core (1 × 2.4 GHz Kryo 475 Prime & 1 × 2.2 GHz Kryo 475 Gold & 6 × 1.8 GHz Kryo 475 Silver) System-on-a-chip: Qualcomm Snapdragon 765G	at least one central processing unit (CPU);	a central processing unit (CPU) for executing and carrying out the instructions of a computer program;	at least one of a central processing unit (CPU) for executing and carrying out the instructions of a computer program, a network processor which is specifically targeted at the networking application domain, or a front-end processor for communication between a host computer and other devices;

<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures. Monitoring air temperatures.</p>	<p>at least one temperature sensor in communication with the at least one CPU for monitoring temperature;</p>	<p>X</p>	<p>X</p>
<p>Gravity sensor supported by the Android platform. Measures the force of gravity in m/s² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).</p>	<p>at least one motion sensor in communication with the at least one CPU;</p>	<p>X</p>	<p>X</p>
<p>Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6-inch flexible OLED display at 432 ppi</p>	<p>at least one viewing screen for monitoring in communication with the at least one CPU;</p>	<p>X</p>	<p>X</p>
<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>at least one global positioning system (GPS) connection in communication with the at least one CPU;</p>	<p>at least one of a satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long range radio frequency (RF) connection, short range radio frequency (RF) connection, or GPS connection;</p>	<p>at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long and short-range radio frequency (RF) connection, or GPS connection;</p>

Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	at least one of an internet connection or a Wi-Fi connection in communication with the at least one CPU;	wherein at least one of... WiFi connection, internet connection, radio frequency (RF) connection, cellular connection... capable of signal communication with the transmitter or the receiver;	wherein the only type or types of communication with the transmitter and the receiver of the communication device and transceivers of the products is a type or types selected from the group... of satellite, Bluetooth, WiFi...
Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	at least one of a Bluetooth connection, a cellular connection, or a satellite connection in communication with the at least one CPU;	at least one of a... Bluetooth connection, WiFi connection, internet connection... cellular connection... short range radio frequency (RF) connection, or GPS connection;	X
<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen. To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	at least one locking mechanism in communication with the at least one CPU for locking the communication device, the at least one locking mechanism configured to at least one of engage (lock) the communication device, disengage (unlock) the communication device, or disable (make unavailable) the communication device;	whereupon the cell phone is interconnected to the cell phone detection device to receive signals or send signals to lock or unlock doors, to activate or deactivate security systems, to activate or deactivate multi-sensor detection systems, or to activate or deactivate the cell phone detection device;	X

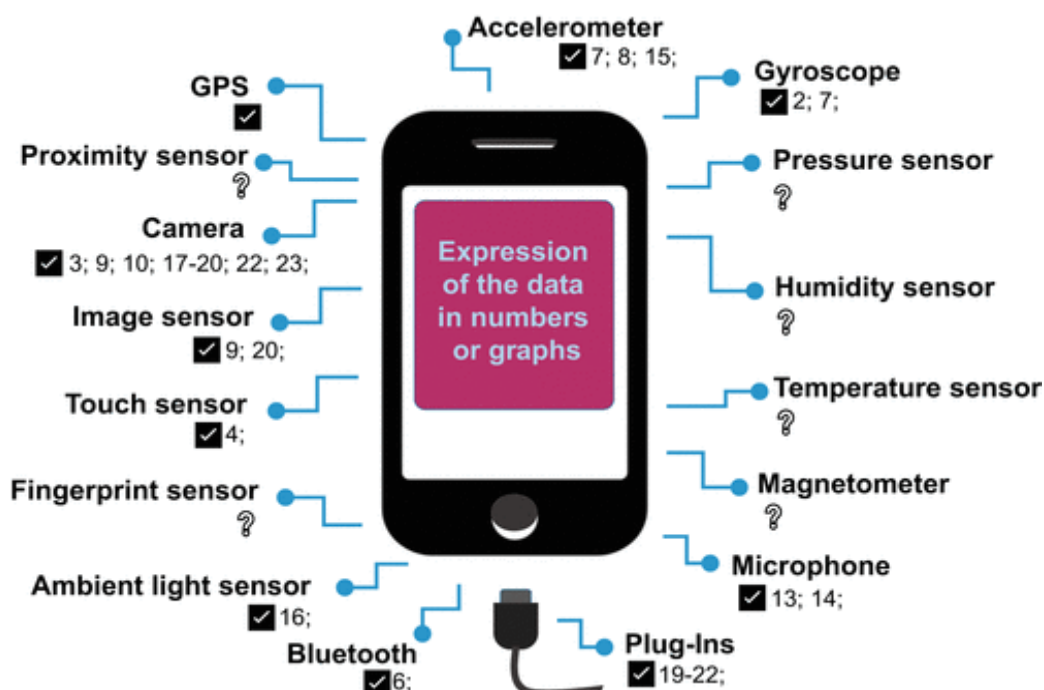
Pixel phones use USB-C with USB 2.0 power adapters and cables. To charge your phone with a USB-A power adapter, use a USB-C to USB-A cable.	at least one power source comprising at least one of a battery, electrical connection, or wireless connection, to provide power to the communication device;	X	X
<p>BIOMETRICS:</p> <p>Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).</p>	at least one biometric sensor in communication with the at least once CPU for providing biometric authentication to access the communication device;	wherein the cell phone is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan, or signature such that the cell phone is locked by the biometric lock disabler to prevent unauthorized use; and	wherein the communication device is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan and signature such that the communication device that is at least one of the cell phone, the smart phone, the desktop, the handheld, the PDA, the laptop or the computer terminal is locked by the biometric lock disabler to prevent unauthorized use
<i>Android Team Awareness Kit</i> , <i>ATAK</i> (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.	at least one sensor for chemical, biological, or human detection in communication with the at least one CPU;	the cell phone is at least a fixed, portable or mobile communication device interconnected to the cell phone detection device, capable of wired or wireless communication therebetween; and	the communication device is at least a fixed, portable or mobile communication device interconnected to a fixed, portable or mobile product, capable of wired or wireless communication therebetween...

<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p>one or more detectors in communication with the at least one CPU for detecting at least one of chemical, biological, radiological, or explosive agents;</p>	<p>at least one of a chemical sensor, a biological sensor, an explosive sensor, a human sensor, a contraband sensor, or a radiological sensor capable of being disposed within, on, upon or adjacent the cell phone;</p>	<p>wherein the communication device receives a signal via any of one or more products listed in any of the plurality of product grouping categories;</p>
<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>at least one radio-frequency near-field communication (NFC) connection in communication with the at least one CPU...</p>	<p>X</p>	<p>X</p>
<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</p>	<p>at least one of a transmitter or a transceiver in communication with the at least one CPU configured to send signals to monitor at least one of a door, a vehicle, or a building, send signals to lock or unlock doors, send signals to control components of a vehicle, send signals to control components of a building, or... detect at least one of a chemical biological... agent such that the communication device is capable of communicating, monitoring, detecting, and controlling.</p>	<p>a transmitter for transmitting signals and messages to a cell phone detection device; a receiver for receiving signals from the cell phone detection device;</p>	<p>a transmitter for transmitting signals and messages to at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p> <p>a receiver for receiving signals, data or messages from at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p>

<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</p>	X	X	<p>whereupon the communication device, is interconnected to a product equipped to receive signals from or send signals to lock or unlock doors, activate or deactivate security systems, activate or deactivate multi-sensor detection systems, or to activate or deactivate cell phone detection systems</p>
<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	X	<p>a transmitter for transmitting signals and messages to a cell phone detection device; a receiver for receiving signals from the cell phone detection device;</p>	<p>wherein at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection... short range radio frequency (RF) connection is capable of signal communication with the transmitter and the receiver of the communication device and transceivers of the products;</p>

<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	X	<p>whereupon a signal sent to the receiver of the cell phone detection device from at least one of the chemical sensor, the biological sensor, the explosive sensor, the human sensor, the contraband sensor, or the radiological sensor, causes a signal that includes at least one of location data or sensor data to be sent to the cell phone.</p>	X
---	---	--	---

DoD DTRA ATAK Smartphone Port for CBRN Plug-Ins



Google Android and Apple iOS are “Native” to the OEMs (i.e., Google, Samsung, LG, Qualcomm, and Apple) manufacture of the smartphones.

Blueforce Plugin Series: CBRNE and HAZMAT Response

The DuraForce Ultra 5G
(CBRN purpose-built *plugins* for smartphones)



The ALTAIR 5X Gas Detector
(Google Android and Apple iOS)



The MSA Altair 4XR Multi-Gas Detector
(Google Android and Apple iOS)



The Thermo RadEye™ PRD Radiation Detector
(Google Android only)

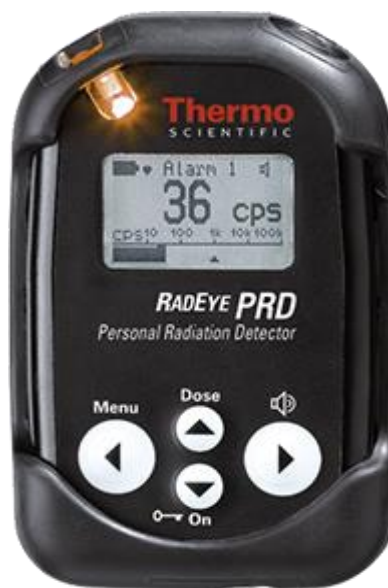



Exhibit B

DoD DTRA ATAK Multi-Sensor Detection System—CBRN

DoD/DTRA ATAK CBRN Sensors for the Google Pixel 5 Smartphone	Patent #: 9,589,439; Independent Claim 19	Patent #: 9,096,189; Independent Claim 7
 <p>With DTRA ... ATAK includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p>A multi-sensor detection system for detecting at least one explosive, nuclear, contraband, chemical, biological, human, radiological agent, or compound, comprising:</p>	<p>A multi-sensor detection system for detecting at least one explosive, nuclear, contraband, chemical, biological, human, or radiological agents and compounds, comprising:</p>
<p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) With DTRA ... ATAK includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</i></p> <p>The Defense Threat Reduction Agency (DTRA) CBRN ISA: Seamlessly integrates information and control of multiple sensors into a single dashboard, making it easier to detect CBRN threats and monitor a warfighter's vitals https://thelastmile.gotennapro.com/four-useful-atak-app-plugins/</p>	<p>a plurality of sensors for detecting at least one chemical, biological, radiological, explosive, nuclear, human, or contraband agent or compound, capable of being disposed within, on, upon or adjacent a multi-sensor detection device;</p>	<p>a plurality of sensors for detecting at least one chemical, biological, radiological, explosive, nuclear, human or contraband agents and compounds and capable of being disposed within, on, upon or adjacent a multi sensor detection device;</p>
<p>ATAK (including CivTAK) is an Android smartphone [i.e., Google smartphone] geospatial infrastructure and situational awareness app https://www.civtak.org/atak-about/. ATAK can be downloaded to a phone, tablet, or handheld device. ATAK is a government-off-the-shelf app for Android smartphones. The mobile broadband 4G LTE connection is able to facilitate the data throughput required for the operation of the ATAK. https://apps.dtic.mil/sti/pdfs/AD1069441.pdf</p>	<p>monitoring equipment comprising at least one of a computer, personal computer (PC), laptop, notebook PC, handheld, cell phone, personal digital assistant (PDA) or smart phone for at least one of a receipt or transmission of signals therebetween;</p>	<p>monitoring equipment comprising at least one of plurality product groups based on the categories of a computer, laptop, notebook, PC, handheld, cell phone, PDA or smart phone for the receipt and transmission of signals therebetween;</p>

<p>The Google phone connects to a cell tower or base station via radio waves, and that tower is usually physically connected to the infrastructure to send that data wherever it needs to go. Draper designed a chemical, biological, radiological and nuclear (CBRN) Plugin to enable users to integrate CBRN sensors into TAK, collect CBRN sensor data, display it on a map and livestream it across the TAK network to other users. CBRN plugins for ATAK, WinTAK and WebTAK are operational in the field. https://www.draper.com/explore-solutions/tak</p>	<p>at least one cell phone tower interconnected to the monitoring equipment for sending signals thereto and receiving signals therefrom or at least one satellite capable of transmitting signals to the monitoring equipment;</p>	<p>at least one cell phone tower interconnected to the monitoring equipment for sending signals thereto and receiving signals therefrom or at least one satellite capable of transmitting signals to the monitoring equipment;</p>
<p>The Android-based [Google] smartphone[s] now contained integrated satellite on-the move capability, on-the-move mapping solutions, and a commercial laser range finder that significantly expanded the end-user range data flow and functionality. The Primary, Alternate, Contingency, and Emergency (PACE) communications architectures established was: • Primary communications structure (P): ATAK—4G/LTE; Antenna: international [] satellite (INMARSAT) https://apps.dtic.mil/sti/pdfs/AD1069441.pdf</p>	<p>at least one satellite or at least one cell phone tower capable of signal communication between the multi-sensor detection device and the monitoring equipment;</p>	<p>at least one satellite or at least one cell phone tower capable of signal communication between the multi-sensor detection device and the monitoring equipment;</p>
<p>The internet connection is shared by many ATAK functions on the Google Pixel 5 smartphone such as internet browsing, receiving email messages and installing apps. Wi-Fi is a method for devices such as the Google Pixel 5 smartphone to connect wirelessly to the Internet using radio waves.</p>	<p>at least one internet connection capable of communication between the multi-sensor detection device and the monitoring equipment;</p>	<p>at least one internet connection capable of communication between the multi sensor detection device and the monitoring equipment;</p>

<p>Sit(x) is a commercial Server-as-a-Service solution based on the TAK platform developed by PAR Government for the U.S. Defense & Intelligence Community. Sit(x) has real-time communication and information sharing. With Sit(x), individuals and teams can communicate via personal computers and handheld mobile [Google smartphone] devices by voice or text. They can share real-time full-motion video (FMV), airborne/drone imagery, GPS locations, photos, and satellite imagery. Fully secure and compatible with ATAK, WinTAK, and iTAK. Sit(x) accessed via free downloadable gateway apps.</p>	<p>whereupon a signal sent to a receiver of the multi-sensor detection device from a satellite; or to a cell phone tower; or through at least one of a short-range radio frequency or a long-range radio frequency; causes a signal to be sent to the monitoring equipment that includes at least one of location data or sensor data;</p>	<p>whereupon a signal sent to a receiver of the multi sensor detection device from a satellite; or to a cell phone tower; or through short and/or long-range radio frequency; causes a signal to be sent to the monitoring equipment that includes location data and sensor data;</p>
<p>The '439 & '189 patent specs: Product grouping (PG) 1 (storage & transportation); PG 2 (sensors); PG 3 (detector case; modified and adapted); PG 4 (monitoring & communication devices); PG 5 (communication methods); PG 6 (biometrics); and, PG 7 (authorized person)</p>	<p>wherein the monitoring equipment or multi-sensor detection device receives a signal via any of one or more products of any product grouping categories;</p>	<p>wherein the monitoring equipment or multi sensor detection device receives a signal via any of one or more products listed in any of the plurality of product grouping categories;</p>
<p>The Android-based [Google] smartphone[s] now contained integrated satellite ...</p> <p>Wi-Fi is a method for devices such as the Google Pixel 5 smartphone to connect wirelessly to the Internet using radio waves...</p> <p>The internet connection is shared by many ATAK functions on the Google Pixel 5 smartphone such as internet browsing, receiving email messages; installing apps...</p> <p>The Google phone connects to a cell tower or base station via radio waves, and that tower is usually physically connected to the infrastructure to send that data wherever it needs to go.</p>	<p>wherein at least one of a satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long range radio frequency connection, or short-range radio frequency (RF) connection is capable of signal communication with the transmitter, a receiver of the monitoring equipment, the multi-sensor detection device, or transceivers of the products;</p>	<p>wherein at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long and short-range radio frequency (RF) connection is capable of signal communication with the transmitter and the receiver of the monitoring equipment or multi sensor detection device and transceivers of the products;</p>

<p>BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).</p> <p>ATAK (including CivTAK) is an Android smartphone [i.e., Google smartphone] geospatial infrastructure and situational awareness app https://www.civtak.org/atak-about/. ATAK can be downloaded to a phone, tablet, or handheld device.</p>	<p>wherein the monitoring equipment is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan or signature such that the monitoring device that is at least one of the computer, the laptop, the notebook, the PC, the handheld, the cell phone, the PDA, or the smart phone is locked by the biometric lock disabler to prevent unauthorized use;</p>	<p>wherein the monitoring equipment is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan and signature such that the monitoring device that is at least one of the computer, the laptop, the notebook, the PC, the handheld, the cell phone, the PDA, or the smart phone is locked by the biometric lock disabler to prevent unauthorized use;</p>
<p>The Android-based [Google] smartphone[s] now contained integrated satellite ...</p> <p>Wi-Fi is a method for devices such as the Google Pixel 5 smartphone to connect wirelessly to the Internet using radio waves...</p> <p>The internet connection is shared by many ATAK functions on the Google Pixel 5 smartphone such as internet browsing, receiving email messages; installing apps...</p> <p>The Google phone connects to a cell tower or base station via radio waves, and that tower is usually physically connected to the infrastructure to send that data wherever it needs to go.</p>	<p>wherein the only type or types of communication with the transmitter and the receiver of the communication device and transceivers of the products is a type or types selected from the group consisting of satellite, Bluetooth, WiFi, internet, radio frequency (RF), cellular, broadband, long range radio frequency, and short-range radio frequency (RF).</p>	<p>wherein the only type or types of communication with the transmitter and the receiver of the communication device and transceivers of the products is a type or types selected from the group consisting of satellite, Bluetooth, WiFi, internet, radio frequency (RF), cellular, broadband, and long and short-range radio frequency (RF).</p>

Exhibit C

INCLUDED IN FEDERAL CIRCUIT INFORMAL BRIEF IN GOLDEN v GOOGLE

- ❖ **BIOMETRICS:** Biometric factors allow for secure authentication on the *Android platform*. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).
- ❖ **DISABLING LOCK MECHANISM:** *Google's Android operating system* features a lock mechanism to secure your phone, known as pattern lock. When setting the pattern, you must drag your finger along lines on the screen between different nodes. Afterward, to unlock the phone, you'll need to replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account. If you can't log in, you'll have to employ some other methods to restore control of your phone.
- ❖ **CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR (CBRN) DETECTION:** Through collaboration and innovation, the Defense Threat Reduction Agency has integrated its powerful, hazard-awareness-and-response tools into the *Android Tactical Assault Kit (or the Android Team Awareness Kit, ATAK)*. ATAK is a digital application available to warfighters throughout the DoD. Built on the *Android operating system*, ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.
- ❖ **HEART RATE:** *Android Team Awareness Kit, ATAK* provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.
- ❖ **NEAR FIELD COMMUNICATION (NFC):** Pixel™, Phone by Google - Turn NFC on/off. *Near Field Communication (NFC)* allows the transfer of data between devices that are a few centimeters apart, typically back-to-back. NFC must be turned on for NFC-based apps (e.g., Tap to Pay) to function correctly. NFC is a set of short-range wireless technologies, typically requiring a distance of 4cm or less to initiate a connection. NFC allows you to share small payloads of data between an NFC tag and an Android-powered device, or between two Android-powered devices. Tags can range in complexity.
- ❖ **WARFIGHTERS:** The U.S. armed forces and their interagency and coalition partners value *Android Team Awareness Kit, ATAK* and the common operating picture it provides. DTRA continues to develop *CBRN-specific plug-in capabilities* to support warfighters on the battlefield.

Google Pixel 5 Smartphone	Apple iPhone 12 Smartphone	Samsung Galaxy S21 Smartphone	LG V60 ThinQ 5G	Asus / Qualcomm Smartphone for Snapdragon Insiders
				
<p>Chipset: Qualcomm Snapdragon 765G CPU: Octa-core (1 × 2.4 GHz Kryo 475 Prime & 1 × 2.2 GHz Kryo 475 Gold & 6 × 1.8 GHz Kryo 475 Silver) OS: Google Android 11, upgradable to Android 13. Modem: Snapdragon® X52 5G Modem-RF System.</p>	<p>Chipset: Apple A14 Bionic (5 nm). CPU: Hexa-core (2x3.1 GHz Firestorm + 4x1.8 GHz Icestorm). OS: iOS 14.1, upgradable to iOS 16.1 Modem: Qualcomm's Snapdragon X55 5G modem</p>	<p>Chipset: Qualcomm SM8350 Snapdragon 888 5G (5 nm). CPU: Octa-core (1x2.84 GHz Cortex-X1 & 3x2.42 GHz Cortex-A78 & 4x1.80 GHz Cortex-A55) - USA/China. OS: Google Android 11, upgradable to Android 13 Modem: Snapdragon® X60 5G Modem-RF System.</p>	<p>Chipset: Qualcomm SM8250 Snapdragon 865 5G (7 nm+). CPU: Octa-core (1x2.84 GHz Cortex-A77 & 3x2.42 GHz Cortex-A77 & 4x1.80 GHz Cortex-A55). OS: Google Android 10, upgradable to Android 13 Modem: Qualcomm's Snapdragon X55 5G modem</p>	<p>Chipset: Qualcomm SM8350 Snapdragon 888 5G (5 nm) CPU: Octa-core (1x2.84 GHz Cortex-X1 & 3x2.42 GHz Cortex-A78 & 4x1.80 GHz Cortex-A55). OS: Google Android 11. Modem: Snapdragon® X60 5G Modem-RF System.</p>
<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures.</p>	<p>Temperature sensors located within; the sensors monitor the battery and processor's temperature. In extreme temperatures (hot or cold), these sensors shut down the device to prevent damage</p>	<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures.</p>	<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures.</p>	<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures.</p>

Gravity sensor supported by the Android platform. Measures the force of gravity in m/s ² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).	Accelerometer (gravity sensor) supported by the iOS platform. Accelerometer/ Motion sensor: This sensor helps the screen automatically switch from landscape to portrait modes and back again based on whether you're holding the phone vertically or horizontally.	Gravity sensor supported by the Android platform. Measures the force of gravity in m/s ² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).	Gravity sensor supported by the Android platform. Measures the force of gravity in m/s ² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).	Gravity sensor supported by the Android platform. Measures the force of gravity in m/s ² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).
Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6-inch flexible OLED display at 432 ppi	Adjusts the screen brightness for current light conditions using the built-in ambient light sensor. Screen: 6.1" Super Retina XDR (OLED). Lock the screen orientation so that it doesn't change when the iPhone is rotated.	Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6.2 inches flexible OLED display at 421 ppi	Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6.8 inches, 109.8 cm ² OLED display at 395 ppi density	Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6.78 inches, 109.5 cm ² OLED display at 395 ppi density
Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 5 802.11 a/b/g/n/ac/6, dual-band, hotspot. Bluetooth 5.0. NFC, GPS, GLONASS, Galileo, QZSS Nano-SIM; eSIM or Dual SIM	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct. Bluetooth 5.0, A2DP, LE, NFC, GPS, GLONASS, BDS, GALILEO. Nano-SIM and eSIM or Dual SIM	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct, DLNA. Bluetooth 5.1, A2DP, LE, aptX HD. NFC, GPS, GLONASS, Galileo, BDS. Single SIM (Nano-SIM) or Hybrid Dual SIM (Nano-SIM, dual stand-by)	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6e, dual-band, Wi-Fi Dir. Bluetooth: 5.2, A2DP, LE, aptX HD, aptX Adaptive. NFC, GPS, GLONASS, BDS, Galileo, QZSS, Dual SIM (Nano-SIM, dual stand-by)

<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>Connectivity: Wi-Fi 5 802.11 a/b/g/n/ac/6, dual-band, hotspot. Bluetooth 5.0. NFC, GPS, GLONASS, Galileo, QZSS Nano-SIM; eSIM or Dual SIM</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct. Bluetooth 5.0, A2DP, LE. NFC, GPS, GLONASS, BDS, GALILEO. Nano-SIM and eSIM or Dual SIM</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct, DLNA. Bluetooth 5.1, A2DP, LE, aptX HD. NFC, GPS, GPS, GLONASS, Galileo, BDS. Single SIM (Nano-SIM)</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6e, dual-band, Wi-Fi Dir. Bluetooth: 5.2, A2DP, LE, aptX HD, aptX Adaptive. NFC, GPS, GLONASS, BDS, Galileo, QZSS, Dual SIM (Nano-SIM, dual stand-by)</p>
<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>Connectivity: Wi-Fi 5 802.11 a/b/g/n/ac/6, dual-band, hotspot. Bluetooth 5.0. NFC, GPS, GLONASS, Galileo, QZSS Nano-SIM; eSIM or Dual SIM</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct. Bluetooth 5.0, A2DP, LE. NFC, GPS, GLONASS, BDS, GALILEO. Nano-SIM and eSIM or Dual SIM</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct, DLNA. Bluetooth 5.1, A2DP, LE, aptX HD. NFC, GPS, GPS, GLONASS, Galileo, BDS. Single SIM (Nano-SIM)</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6e, dual-band, Wi-Fi Dir. Bluetooth: 5.2, A2DP, LE, aptX HD, aptX Adaptive. NFC, GPS, GLONASS, BDS, Galileo, QZSS, Dual SIM (Nano-SIM, dual stand-by)</p>
<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen. To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	<p>Apple's iOS operating system features a lock mechanism to secure your phone. After multiple failed attempts to unlock the phone, the phone locks and is disabled (made unavailable).</p> <p>Apple Home Key digital security code is stored in Apple Wallet app. It is based on NFC technology. 2 modes of operation: Express Mode: Bring an iPhone or Apple Watch to the lock. Face ID or Passcode. Must use Face ID / Touch ID or enter a passcode.</p>	<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen. To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen. To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen. To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>

Pixel phones use USB-C with USB 2.0 power adapters and cables. To charge your phone with a USB-A power adapter, use a USB-C to USB-A cable.	USB-A to Lightning cable or the newer USB-C to Lightning cable with your iPhone. The MagSafe Battery Pack makes on-the-go, wireless charging easy and reliable—just attach it to your iPhone	Samsung USB-C Cable lets you charge your USB-C device as well as sync your data to your smartphone	UrbanX USB-C to USB 3.1 Adapter, USB-C Male to USB-A Female, Uses USB OTG Technology, Compatible with LG V60 ThinQ 5G	ASUS / Qualcomm Smartphone for Snapdragon Insiders Dual Port 32GB USB Type C Memory Stick; 32GB USB Type-C flash drive; Features USB Type-C connector and a traditional USB connector.
BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).	Apple's iOS operating system allows for Face ID authentication with the iPhone 12. The phone also features a lock mechanism to secure your phone. After multiple failed attempts to unlock the phone, the phone locks and is disabled (made unavailable). Apple Home Key digital security code is stored in Apple Wallet app. It is based on NFC technology. 2 modes of operation: Express Mode: Bring an iPhone or Apple Watch to the lock. Face ID or Passcode. Must use Face ID, Touch ID, or enter a passcode.	BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).	BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).	BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).

<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.</p>	<p><i>iOS Team Awareness Kit</i>, iTAK (built on the iOS 14.1, or later, operating system) provides an interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.</p>
<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>iOS Team Awareness Kit</i>, iTAK (built on the iOS 14.1, or later, operating system) is a digital application available to warfighters throughout the DHS / DoD. iTAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, iTAK includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>

<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>Connectivity: Wi-Fi 5 802.11 a/b/g/n/ac/6, dual- band, hotspot. Bluetooth 5.0. NFC, GPS, GLONASS, Galileo, QZSS Nano-SIM; eSIM or Dual SIM</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual- band, Wi-Fi Direct. Bluetooth 5.0, A2DP, LE, NFC, GPS, GLONASS, BDS, GALILEO. Nano-SIM and eSIM or Dual SIM</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct, DLNA. Bluetooth 5.1, A2DP, LE, aptX HD. NFC, GPS, GPS, GLONASS, Galileo, BDS. Single SIM (Nano- SIM</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/ 6e, dual-band, Wi- Fi Dir. Bluetooth: 5.2, A2DP, LE, aptX HD, aptX Adaptive. NFC, GPS, GLONASS, BDS, Galileo, QZSS, Dual SIM (Nano-SIM, dual stand-by)</p>
<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>Apple Home Key digital security code is stored in Apple Wallet app. It is based on NFC technology. 2 modes of operation: Express Mode: Bring an iPhone or Apple Watch to the lock. Face ID or Passcode. Must use Face ID / Touch ID, or enter a passcode.</p> <p><i>iOS Team Awareness Kit, iTAK (built on the iOS 14.1, or later, operating system) provides an interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>

<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</p>	<p>Apple Home Key digital security code is stored in Apple Wallet app. It is based on NFC technology. 2 modes of operation: Express Mode: Bring an iPhone or Apple Watch to the lock. Face ID or Passcode. Must use Face ID-Touch ID or enter a passcode.</p> <p><i>iOS Team Awareness Kit</i>, iTAK (built on the iOS 14.1, or later, operating system) provides an interface for viewing and controlling different CBRN-sensing technologies</p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</p>
<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>iOS Team Awareness Kit</i>, iTAK (built on the iOS 14.1, or later, operating system) is a digital application available to warfighters throughout the DHS / DoD. iTAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, iTAK includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>

<p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</i></p>	<p><i>iOS Team Awareness Kit, iTAK (built on the iOS 14.1, or later, operating system) is a digital application available to warfighters throughout the DHS / DoD. iTAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, iTAK includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</i></p>	<p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</i></p>	<p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</i></p>	<p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</i></p>
--	--	--	--	--

Figure 1

Google’s “use” of Plaintiff’s Patented Central Processing Units (CPUs)

“[T]he Accused Products (i.e., Google, Apple, Samsung, LG, and Asus/Qualcomm smartphones) , which are “computers” (i.e., cell phones, computer tablets, and laptops), include components of a memory, a display, and a **processor**” ... “[w]hen in use, the “Find My Device” pre-loaded onto the Accused Product uses a **processor**” ... “[t]he “Find My Device” feature displays [] information through a **processor** using data stored in the device’s memory” ... “[t]he LG Support Page lays out in a step-by-step process how to correctly remotely log in to the **processor** to access [] lock the device” ... *See Carolyn Hafeman v. LG Electronics Inc.*

In the above claim chart, the Google, Samsung, LG, and Asus/Qualcomm smartphones have Qualcomm Snapdragon Chipsets; have Octa-core CPUs (**processors**); have Google Android Operating Systems; have Qualcomm Snapdragon Modems; have Google “Find My Device” pre-installed *See Carolyn Hafeman v. LG Electronics Inc.*; have Google Android Team Awareness Kits; have Megapixel cameras for CBR sensing; have cameras for captioning nanopores; Biosensors for CBRNE detection; and, Plug-Ins for CBRN detection.

Figure 2 is a comparative chart of the “megapixel” smartphone cameras used for detecting Chem/Bio agents. For each different way used, it qualifies as an alternative to the ATAK.

Google Pixel 5 Smartphone	Apple iPhone 12 Smartphone	Samsung Galaxy S21 Smartphone	LG V60 ThinQ 5G	Asus / Qualcomm Smartphone for Snapdragon Insiders
<p>Google Pixel 5: Dual - 12.2 MP (megapixel), OIS 16 MP (megapixel)</p> <p>Camera lens in cell phone with microfluidic lens functions as camera; uses microscope to focus on a chemical sensor. A megapixel camera captures the image from the array of nanopores uses fluid rather than bulky moving parts. The sensors contained in one array is determined by the pixel resolution phone camera. Megapixel resolution in cell phone cameras; probe a million different spots on the sensor simultaneously. <i>Tiny sensors tucked into cell phones could map airborne toxins in real time.</i> Source: https://www.understandingnano.com/cell-phone-sensors-toxins.html</p>	<p>Apple iPhone 12: Dual - 12 MP (megapixel), OIS 12 MP (megapixel)</p> <p>Camera lens in cell phone with microfluidic lens functions as camera; uses microscope to focus on a chemical sensor. A megapixel camera captures the image from the array of nanopores uses fluid rather than bulky moving parts. The sensors contained in one array is determined by the pixel resolution phone camera. Megapixel resolution in cell phone cameras; probe a million different spots on the sensor simultaneously. <i>Tiny sensors tucked into cell phones could map airborne toxins in real time.</i> Source: https://www.understandingnano.com/cell-phone-sensors-toxins.html</p>	<p>Samsung Galaxy S21: Triple - 12 MP (megapixel), OIS 64 MP (megapixel)</p> <p>Camera lens in cell phone with microfluidic lens functions as camera; uses microscope to focus on a chemical sensor. A megapixel camera captures the image from the array of nanopores uses fluid rather than bulky moving parts. The sensors contained in one array is determined by the pixel resolution phone camera. Megapixel resolution in cell phone cameras; probe a million different spots on the sensor simultaneously. <i>Tiny sensors tucked into cell phones could map airborne toxins in real time.</i> Source: https://www.understandingnano.com/cell-phone-sensors-toxins.html</p>	<p>LG V60 ThinQ 5G: Dual - 64 MP (megapixel), OIS 13 MP (megapixel)</p> <p>Camera lens in cell phone with microfluidic lens functions as camera; uses microscope to focus on a chemical sensor. A megapixel camera captures the image from the array of nanopores uses fluid rather than bulky moving parts. The sensors contained in one array is determined by the pixel resolution phone camera. Megapixel resolution in cell phone cameras; probe a million different spots on the sensor simultaneously. <i>Tiny sensors tucked into cell phones could map airborne toxins in real time.</i> Source: https://www.understandingnano.com/cell-phone-sensors-toxins.html</p>	<p>Asus / Qualcomm: Triple - 64 MP (megapixel) OIS; 8 MP, 12MP (mega)</p> <p>Camera lens in cell phone with microfluidic lens functions as camera; uses microscope to focus on a chemical sensor. A megapixel camera captures the image from the array of nanopores uses fluid rather than bulky moving parts. The sensors contained in one array is determined by the pixel resolution phone camera. Megapixel resolution in cell phone cameras; probe a million different spots on the sensor simultaneously. <i>Tiny sensors tucked into cell phones could map airborne toxins in real time.</i> Source: https://www.understandingnano.com/cell-phone-sensors-toxins.html</p>

Figure 2

Figure 3 is a visual display of different ways the smartphone camera ¹² can be used for detecting Chem/Bio agents. For each different way used, it qualifies as an alternative to the ATAK.



Figure 3

1 The camera captures the image from the array of nanopores that uses fluid rather than bulky moving parts. The sensors contained in one array is determined by the resolution phone camera. The resolution in cell phone cameras; probe a million different spots on the sensor simultaneously. *Tiny sensors tucked into cell phones could map airborne toxins in real time.* Source: [https:// www.understanding nano.com/cell-phone-sensors-toxins.html](https://www.understandingnano.com/cell-phone-sensors-toxins.html)

2 Hyperspectral imaging scans for light frequencies that humans can't see in order to identify the unique chemical signatures of different substances. They say their device, which can be mass produced, is compatible with all standard smartphone cameras. *These New Smartphone Cameras Could Tell You What an Object Is Made of* <https://www.sciencealert.com/new-smartphone-cameras-could-tell-you-what-an-object-is-made-of>

Figure 4 describes how at least nine (9) standard sensors for the Google, Apple, Samsung, LG, and Asus/Qualcomm smartphones can be used as “biosensors”. For each different way used, it qualifies as an alternative to ATAK.

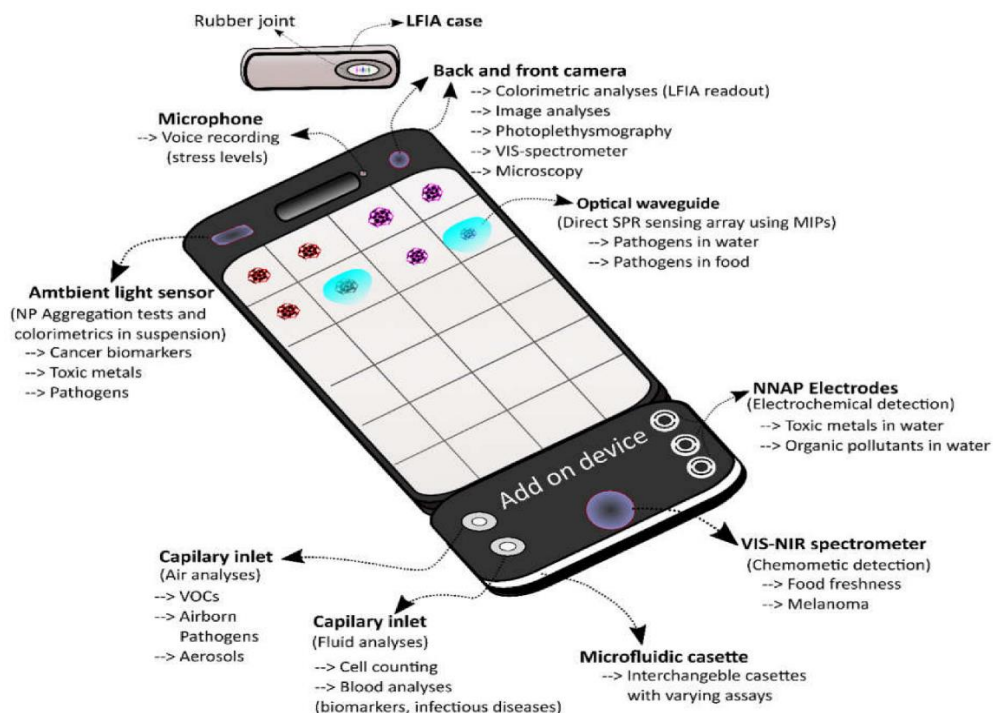


Figure 4

The Smartphones Biosensors:

1. Ambient light sensor: Cancer biomarkers; Toxic metals; Pathogens
2. Capillary inlet: (Air analysis). Airborne Pathogens; Aerosols
3. Capillary inlet: (Fluid analysis). Blood analysis; Biomarkers
4. Microfluidic cassette: Interchangeable cassettes with varying assays
5. VIS-NIR spectrometer: Food freshness; Melanoma
6. NNAP Electrodes: Toxic metals and Organic pollutants in water
7. Optical Waveguide: Pathogens in water and food
8. Back and front camera: Colorimetric analysis; Image analysis
9. Microphone: Voice recording stress levels

Figure 5 list some of the same standard sensors illustrated in Figure 4. The port on the smartphones is used for the CBRN *plug-ins* included in ATAK.

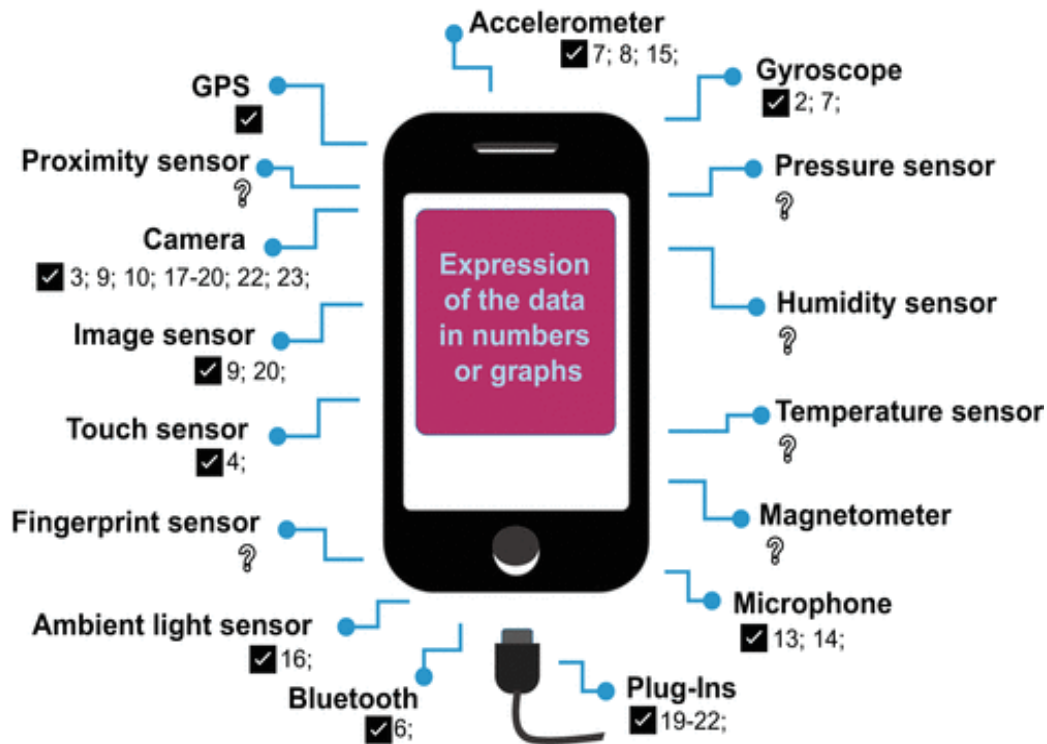




Figure 5

ATAK is a digital application available to warfighters throughout the DoD. Built on the Android operating system, ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA’s contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) *plug-ins*.

Just having a plug-in is not all that’s involved. There has to be an app specific software to sync the chemical, biological, radiological, and nuclear sensors to the smartphone plus the Google Android Operating System.

Exhibit D

Google Pixel 5 Smartphone and Apple iPhone 12 Smartphone Comparison

Google Pixel 5 Smartphone	Apple iPhone 12 Smartphone	Claim 5 of the '287 Patent	Claim 23 of the '439 Patent	Claim 1 of the '189 Patent
		<p>A monitoring device, comprising:</p>	<p>A cell phone comprising:</p>	<p>A communication device of at least one of a cell phone, a smart phone, a desktop, a handheld, a PDA, a laptop, or a computer terminal for monitoring products, interconnected to a product for communication therebetween, comprising:</p>
<p>CPU: Octa-core (1 × 2.4 GHz Kryo 475 Prime & 1 × 2.2 GHz Kryo 475 Gold & 6 × 1.8 GHz Kryo 475 Silver) System-on-a-chip: Qualcomm Snapdragon 765G</p>	<p>CPU: Hexa-core (2x3.1 GHz Firestorm + 4x1.8 GHz Icestorm). System-on-a-chip: Apple A14 Bionic (5 nm). iOS 14.1, upgradable to iOS 16.1</p>	<p>at least one central processing unit (CPU);</p>	<p>a central processing unit (CPU) for executing and carrying out the instructions of a computer program;</p>	<p>at least one of a central processing unit (CPU) for executing and carrying out the instructions of a computer program, a network processor which is specifically targeted at the networking application domain, or a front-end processor for communication between a host computer and other devices;</p>
<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures.</p>	<p>Temperature sensors located within; the sensors monitor the battery and processor's temperature. In extreme temperatures (hot or cold), these sensors shut down the device to prevent damage</p>	<p>at least one temperature sensor in communication with the at least one CPU for monitoring temperature;</p>	<p style="text-align: center;">X</p>	<p style="text-align: center;">X</p>

Gravity sensor supported by the Android platform. Measures the force of gravity in m/s ² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).	Accelerometer (gravity sensor) supported by the iOS platform. Accelerometer/Motion sensor: This sensor helps the screen automatically switch from landscape to portrait modes and back again based on whether you're holding the phone vertically or horizontally.	at least one motion sensor in communication with the at least one CPU;	X	X
Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6-inch flexible OLED display at 432 ppi	Adjusts the screen brightness for current light conditions using the built-in ambient light sensor. Screen: 6.1" Super Retina XDR (OLED). Lock the screen orientation so that it doesn't change when the iPhone is rotated.	at least one viewing screen for monitoring in communication with the at least one CPU;	X	X
Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 5 802.11 a/b/g/n/ac/6, dual-band, hotspot. Bluetooth 5.0. NFC, GPS, GLONASS, Galileo, QZSS Nano-SIM; eSIM or Dual SIM	at least one global positioning system (GPS) connection in communication with the at least one CPU;	at least one of a satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long range radio frequency (RF) connection, short range radio frequency (RF) connection, or GPS connection;	at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long and short-range radio frequency (RF) connection, or GPS connection;

<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>Connectivity: Wi-Fi 5 802.11 a/b/g/n/ac/6, dual- band, hotspot. Bluetooth 5.0. NFC, GPS, GLONASS, Galileo, QZSS Nano- SIM; eSIM or Dual SIM</p>	<p>at least one of an internet connection or a Wi-Fi connection in communication with the at least one CPU;</p>	<p>wherein at least one of... WiFi connection, internet connection, radio frequency (RF) connection, cellular connection... capable of signal communication with the transmitter or the receiver;</p>	<p>wherein the only type or types of communication with the transmitter and the receiver of the communication device and transceivers of the products is a type or types selected from the group... of satellite, Bluetooth, WiFi...</p>
<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>Connectivity: Wi-Fi 5 802.11 a/b/g/n/ac/6, dual- band, hotspot. Bluetooth 5.0. NFC, GPS, GLONASS, Galileo, QZSS Nano- SIM; eSIM or Dual SIM</p>	<p>at least one of a Bluetooth connection, a cellular connection, or a satellite connection in communication with the at least one CPU;</p>	<p>at least one of a... Bluetooth connection, WiFi connection, internet connection... cellular connection... short range radio frequency (RF) connection, or GPS connection;</p>	<p>X</p>
<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen. To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	<p>Apple's iOS operating system features a lock mechanism to secure your phone. After multiple failed attempts to unlock the phone, the phone locks and is disabled (made unavailable).</p> <p>Apple Home Key digital security code is stored in Apple Wallet app. It is based on NFC technology. 2 modes of operation: Express Mode: Bring an iPhone or Apple Watch to the lock. Face ID or Passcode. Must use Face ID / Touch ID or enter a passcode.</p>	<p>at least one locking mechanism in communication with the at least one CPU for locking the communication device, the at least one locking mechanism configured to at least one of engage (lock) the communication device, disengage (unlock) the communication device, or disable (make unavailable) the communication device;</p>	<p>whereupon the cell phone is interconnected to the cell phone detection device to receive signals or send signals to lock or unlock doors, to activate or deactivate security systems, to activate or deactivate multi- sensor detection systems, or to activate or deactivate the cell phone detection device;</p>	<p>X</p>

Pixel phones use USB-C with USB 2.0 power adapters and cables. To charge your phone with a USB-A power adapter, use a USB-C to USB-A cable.	USB-A to Lightning cable or the newer USB-C to Lightning cable with your iPhone. The MagSafe Battery Pack makes on-the-go, wireless charging easy and reliable—just attach it to your iPhone	at least one power source comprising at least one of a battery, electrical connection, or wireless connection, to provide power to the communication device;	X	X
<p>BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).</p>	<p>Apple's iOS operating system allows for Face ID authentication with the iPhone 12. The phone also features a lock mechanism to secure your phone. After multiple failed attempts to unlock the phone, the phone locks and is disabled (made unavailable).</p> <p>Apple Home Key digital security code is stored in Apple Wallet app. It is based on NFC technology. 2 modes of operation: Express Mode: Bring an iPhone or Apple Watch to the lock. Face ID or Passcode. Must use Face ID, Touch ID, or enter a passcode.</p>	at least one biometric sensor in communication with the at least once CPU for providing biometric authentication to access the communication device;	wherein the cell phone is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan, or signature such that the cell phone is locked by the biometric lock disabler to prevent unauthorized use; and	wherein the communication device is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan and signature such that the communication device that is at least one of the cell phone, the smart phone, the desktop, the handheld, the PDA, the laptop or the computer terminal is locked by the biometric lock disabler to prevent unauthorized use

<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.</p>	<p><i>iOS Team Awareness Kit</i>, iTAK (built on the iOS 14.1, or later, operating system) provides an interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.</p>	<p>at least one sensor for chemical, biological, or human detection in communication with the at least one CPU;</p>	<p>the cell phone is at least a fixed, portable or mobile communication device interconnected to the cell phone detection device, capable of wired or wireless communication therebetween; and</p>	<p>the communication device is at least a fixed, portable or mobile communication device interconnected to a fixed, portable or mobile product, capable of wired or wireless communication therebetween...</p>
<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>iOS Team Awareness Kit</i>, iTAK (built on the iOS 14.1, or later, operating system) is a digital application available to warfighters throughout the DHS / DoD. iTAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, iTAK includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p>one or more detectors in communication with the at least one CPU for detecting at least one of chemical, biological, radiological, or explosive agents;</p>	<p>at least one of a chemical sensor, a biological sensor, an explosive sensor, a human sensor, a contraband sensor, or a radiological sensor capable of being disposed within, on, upon or adjacent the cell phone;</p>	<p>wherein the communication device receives a signal via any of one or more products listed in any of the plurality of product grouping categories;</p>

<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>Connectivity: Wi-Fi 5 802.11 a/b/g/n/ac/6, dual- band, hotspot. Bluetooth 5.0. NFC, GPS, GLONASS, Galileo, QZSS Nano- SIM; eSIM or Dual SIM</p>	<p>at least one radio- frequency near- field communication (NFC) connection in communication with the at least one CPU...</p>	<p>X</p>	<p>X</p>
<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</p>	<p>Apple Home Key digital security code is stored in Apple Wallet app. It is based on NFC technology. 2 modes of operation: Express Mode: Bring an iPhone or Apple Watch to the lock. Face ID or Passcode. Must use Face ID / Touch ID, or enter a passcode.</p> <p><i>iOS Team Awareness Kit</i>, iTAK (built on the iOS 14.1, or later, operating system) provides an interface for viewing and controlling different CBRN-sensing technologies</p>	<p>at least one of a transmitter or a transceiver in communication with the at least one CPU configured to send signals to monitor at least one of a door, a vehicle, or a building, send signals to lock or unlock doors, send signals to control components of a vehicle, send signals to control components of a building, or... detect at least one of a chemical biological... agent such that the communication device is capable of communicating, monitoring, detecting, and controlling.</p>	<p>a transmitter for transmitting signals and messages to a cell phone detection device; a receiver for receiving signals from the cell phone detection device;</p>	<p>a transmitter for transmitting signals and messages to at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p> <p>a receiver for receiving signals, data or messages from at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p>

<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK</i> (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</p>	<p>Apple Home Key digital security code is stored in Apple Wallet app. It is based on NFC technology. 2 modes of operation: Express Mode: Bring an iPhone or Apple Watch to the lock. Face ID or Passcode. Must use Face ID / Touch ID or enter a passcode.</p> <p><i>iOS Team Awareness Kit, iTAK</i> (built on the iOS 14.1, or later, operating system) provides an interface for viewing and controlling different CBRN-sensing technologies</p>	X	X	<p>whereupon the communication device, is interconnected to a product equipped to receive signals from or send signals to lock or unlock doors, activate or deactivate security systems, activate or deactivate multi-sensor detection systems, or to activate or deactivate cell phone detection systems</p>
<p><i>Android Team Awareness Kit, ATAK</i> (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>iOS Team Awareness Kit, iTAK</i> (built on the iOS 14.1, or later, operating system) is a digital application available to warfighters throughout the DHS / DoD. iTAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, iTAK includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	X	<p>a transmitter for transmitting signals and messages to a cell phone detection device; a receiver for receiving signals from the cell phone detection device;</p>	<p>wherein at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection... short range radio frequency (RF) connection is capable of signal communication with the transmitter and the receiver of the communication device and transceivers of the products;</p>

<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>iOS Team Awareness Kit</i>, iTAK (built on the iOS 14.1, or later, operating system) is a digital application available to warfighters throughout the DHS / DoD. iTAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, iTAK includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	X	<p>whereupon a signal sent to the receiver of the cell phone detection device from at least one of the chemical sensor, the biological sensor, the explosive sensor, the human sensor, the contraband sensor, or the radiological sensor, causes a signal that includes at least one of location data or sensor data to be sent to the cell phone.</p>	X
--	--	---	--	---

Figure 1 outline different ways the smartphone camera can be used for detecting Chem/Bio agents. For each different way used it qualifies as an alternative to the Google Android ATAk and Apple iOS iTAK.



Figure 1

The camera captures the image from the array of nanopores that uses fluid rather than bulky moving parts. The sensors contained in one array is determined by the resolution phone camera. The resolution in cell phone cameras; probe a million different spots on the sensor simultaneously. *Tiny sensors tucked into cell phones could map airborne toxins in real time.* Source: [https:// www.understanding nano.com/cell-phone-sensors-toxins.html](https://www.understandingnano.com/cell-phone-sensors-toxins.html)

Hyperspectral imaging scans for light frequencies that humans can't see in order to identify the unique chemical signatures of different substances. They say their device, which can be mass produced, is compatible with all standard smartphone cameras. *These New Smartphone Cameras Could Tell You What an Object Is Made of* <https://www.sciencealert.com/new-smartphone-cameras-could-tell-you-what-an-object-is-made-of>

Figure 2 describes how at least nine (9) standard “Native” sensors for the smartphone can be used as “biosensors”. For each different way used it qualifies as an alternative to the Google Android iATK and Apple iOS iATK.



Figure 2

The Smartphones Biosensors:

1. Ambient light sensor: Cancer biomarkers; Toxic metals; Pathogens
2. Capillary inlet: (Air analysis). Airborne Pathogens; Aerosols
3. Capillary inlet: (Fluid analysis). Blood analysis; Biomarkers
4. Microfluidic cassette: Interchangeable cassettes with varying assays
5. VIS-NIR spectrometer: Food freshness; Melanoma
6. NNAP Electrodes: Toxic metals and Organic pollutants in water
7. Optical Waveguide: Pathogens in water and food
8. Back and front camera: Colorimetric analysis; Image analysis
9. Microphone: Voice recording stress levels

Figure 3 “Native” to the smartphone is a “port” for *plug-ins* that are at least: embedded into, affixed to, placed upon; software based, or hardware based, wired or wireless connection, for CBRNE detection.

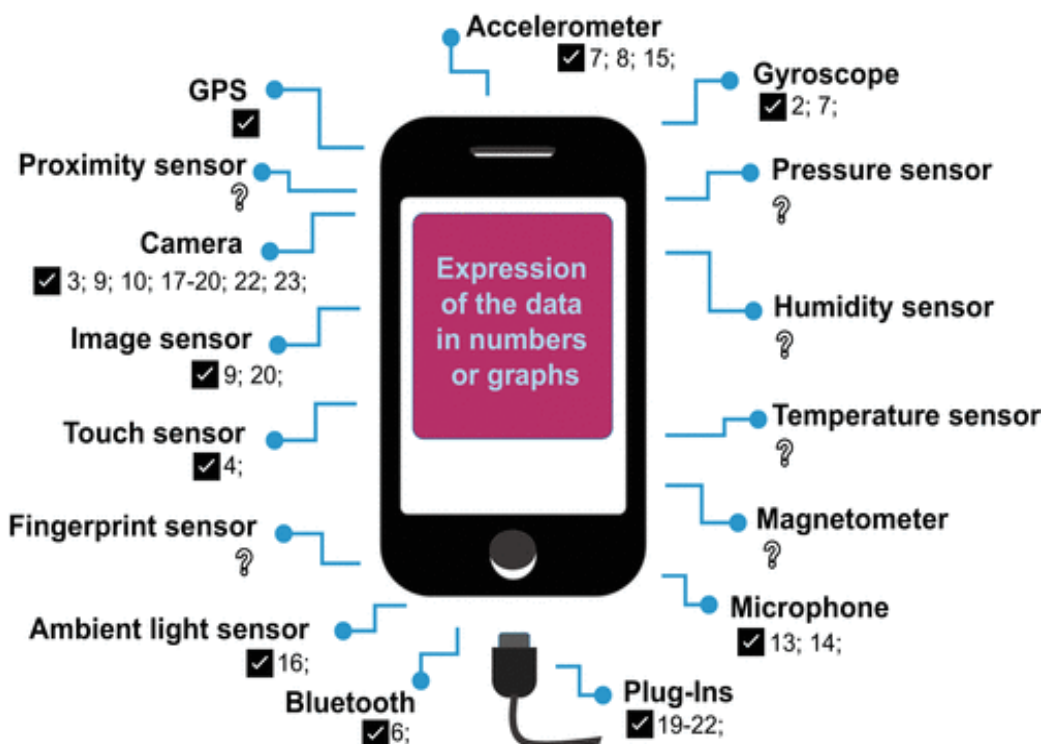


Figure 3

Blueforce Plugin Series: CBRNE and HAZMAT Response (See also Figure 8)

BlueforceTACTICAL (CBRN purpose-built *plugins* for smartphones): The DuraForce Ultra 5G is Kyocera’s toughest, most durable smartphone to date, certified to military standard 810H (MIL-STD-810H) to withstand drops



BlueforceTACTICAL (Google Android and Apple iOS): The ALTAIR 5X Gas Detector is capable of measuring up to 6 gases simultaneously and is now available with integrated PID sensor for VOC detection. The 5X provide real-time environmental awareness when paired via Bluetooth® with the BlueforceTACTICAL MSA *Plugin*.

BlueforceTACTICAL (Google Android and Apple iOS): The MSA Altair 4XR Multi-Gas Detector detects O2, LEL, CO and H2S. Outfitted with rapid-response MSA XCell® sensors, the ALTAIR 4XR Gas Detector is the toughest 4-gas monitor on the market and is backed by a 4-year warranty. The ALTAIR 4XR can also provide real-time incident awareness when paired via Bluetooth® with the BlueforceTACTICAL MSA *Plugin*.

BlueforceTACTICAL (Google Android only): Detect and localize radiation sources generated by manmade devices such as nuclear weapons, improvised nuclear devices (INDs) or radiological dispersal devices (RDDs) with the Thermo Scientific™ RadEye™ PRD Personal Radiation Detector. The BlueforceTACTICAL *Plugin* shares PRD data with other responders and can simultaneously push readings to cloud databases for longitudinal analysis.

Exhibit E

**CLAIM CHART FOR THE SMARTPHONE COMPARISON BETWEEN
THE GOOGLE PIXEL 5 AND THE SAMSUNG GALAXY S21. THE
GOOGLE PIXEL 5 SPECIFICATIONS AND THE PATENT CLAIMS'
LIMITATIONS FOR THE '287, '439, & '189 PATENTS ARE THE SAME
AS IN *LARRY GOLDEN v. GOOGLE LLC*; CAFC CASE NO. 22-1267**

Google Pixel 5 Smartphone	Samsung Galaxy S21 Smartphone	Patent #: 10,163,287; Independent Claim 5	Patent #: 9,589,439; Independent Claim 23	Patent #: 9,096,189; Independent Claim 1
		A monitoring device, comprising:	A cell phone comprising:	A communication device of at least one of a cell phone, a smart phone, a desktop, a handheld, a PDA, a laptop, or a computer terminal for monitoring products, interconnected to a product for communication therebetween, comprising:
CPU: Octa-core (1 × 2.4 GHz Kryo 475 Prime & 1 × 2.2 GHz Kryo 475 Gold & 6 × 1.8 GHz Kryo 475 Silver) System-on-a-chip: Qualcomm Snapdragon 765G	CPU: Octa-core (1x2.84 GHz Cortex-X1 & 3x2.42 GHz Cortex-A78 & 4x1.80 GHz Cortex-A55) - USA/China. Chipset: Qualcomm SM8350 Snapdragon 888 5G (5 nm). OS: Google Android 11, upgradable to Android 13 Modem: Snapdragon® X60 5G Modem-RF System.	at least one central processing unit (CPU);	a central processing unit (CPU) for executing and carrying out the instructions of a computer program;	at least one of a central processing unit (CPU) for executing and carrying out the instructions of a computer program, a network processor which is specifically targeted at the networking application domain, or a front-end processor for communication between a host computer and other devices;

<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures. Monitoring air temperatures.</p>	<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures.</p>	<p>at least one temperature sensor in communication with the at least one CPU for monitoring temperature;</p>	<p>X</p>	<p>X</p>
<p>Gravity sensor supported by the Android platform. Measures the force of gravity in m/s² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).</p>	<p>Gravity sensor supported by the Android platform. Measures the force of gravity in m/s² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).</p>	<p>at least one motion sensor in communication with the at least one CPU;</p>	<p>X</p>	<p>X</p>
<p>Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6-inch flexible OLED display at 432 ppi</p>	<p>Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6.2 inches flexible OLED display at 421 ppi</p>	<p>at least one viewing screen for monitoring in communication with the at least one CPU;</p>	<p>X</p>	<p>X</p>

Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct. Bluetooth 5.0, A2DP, LE. NFC, GPS, GLONASS, BDS, GALILEO. Nano-SIM and eSIM or Dual SIM	at least one global positioning system (GPS) connection in communication with the at least one CPU;	at least one of a satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long range radio frequency (RF) connection, short range radio frequency (RF) connection, or GPS connection;	at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long and short-range radio frequency (RF) connection, or GPS connection;
Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct. Bluetooth 5.0, A2DP, LE. NFC, GPS, GLONASS, BDS, GALILEO. Nano-SIM and eSIM or Dual SIM	at least one of an internet connection or a Wi-Fi connection in communication with the at least one CPU;	wherein at least one of... WiFi connection, internet connection, radio frequency (RF) connection, cellular connection... capable of signal communication with the transmitter or the receiver;	wherein the only type or types of communication with the transmitter and the receiver of the communication device and transceivers of the products is a type or types selected from the group... of satellite, Bluetooth, WiFi...
Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct. Bluetooth 5.0, A2DP, LE. NFC, GPS, GLONASS, BDS, GALILEO. Nano-SIM and eSIM or Dual SIM	at least one of a Bluetooth connection, a cellular connection, or a satellite connection in communication with the at least one CPU;	at least one of a... Bluetooth connection, WiFi connection, internet connection... cellular connection... short range radio frequency (RF) connection, or GPS connection;	X

<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen.</p> <p>To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen.</p> <p>To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	<p>at least one locking mechanism in communication with the at least one CPU for locking the communication device, the at least one locking mechanism configured to at least one of engage (lock) the communication device, disengage (unlock) the communication device, or disable (make unavailable) the communication device;</p>	<p>whereupon the cell phone is interconnected to the cell phone detection device to receive signals or send signals to lock or unlock doors, to activate or deactivate security systems, to activate or deactivate multi-sensor detection systems, or to activate or deactivate the cell phone detection device;</p>	X
<p>Pixel phones use USB-C with USB 2.0 power adapters and cables. To charge your phone with a USB-A power adapter, use a USB-C to USB-A cable.</p>	<p>Samsung USB-C Cable lets you charge your USB-C device as well as sync your data to your smartphone</p>	<p>at least one power source comprising at least one of a battery, electrical connection, or wireless connection, to provide power to the communication device;</p>	X	X

<p>BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).</p>	<p>BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).</p>	<p>at least one biometric sensor in communication with the at least once CPU for providing biometric authentication to access the communication device;</p>	<p>wherein the cell phone is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan, or signature such that the cell phone is locked by the biometric lock disabler to prevent unauthorized use; and</p>	<p>wherein the communication device is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan and signature such that the communication device that is at least one of the cell phone, the smart phone, the desktop, the handheld, the PDA, the laptop or the computer terminal is locked by the biometric lock disabler to prevent unauthorized use</p>
<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents</p>	<p>at least one sensor for chemical, biological, or human detection in communication with the at least one CPU;</p>	<p>the cell phone is at least a fixed, portable or mobile communication device interconnected to the cell phone detection device, capable of wired or wireless communication therebetween; and</p>	<p>the communication device is at least a fixed, portable or mobile communication device interconnected to a fixed, portable or mobile product, capable of wired or wireless communication therebetween...</p>



<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p>one or more detectors in communication with the at least one CPU for detecting at least one of chemical, biological, radiological, or explosive agents;</p>	<p>at least one of a chemical sensor, a biological sensor, an explosive sensor, a human sensor, a contraband sensor, or a radiological sensor capable of being disposed within, on, upon or adjacent the cell phone;</p>	<p>wherein the communication device receives a signal via any of one or more products listed in any of the plurality of product grouping categories;</p>
<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct. Bluetooth 5.0, A2DP, LE. NFC, GPS, GLONASS, BDS, GALILEO. Nano-SIM and eSIM or Dual SIM</p>	<p>at least one radio-frequency near-field communication (NFC) connection in communication with the at least one CPU...</p>	<p>X</p>	<p>X</p>

<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>at least one of a transmitter or a transceiver in communication with the at least one CPU configured to send signals to monitor at least one of a door, a vehicle, or a building, send signals to lock or unlock doors, send signals to control components of a vehicle, send signals to control components of a building, or... detect at least one of a chemical biological... agent such that the communication device is capable of communicating, monitoring, detecting, and controlling.</p>	<p>a transmitter for transmitting signals and messages to a cell phone detection device; a receiver for receiving signals from the cell phone detection device;</p>	<p>a transmitter for transmitting signals and messages to at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p> <p>a receiver for receiving signals, data or messages from at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p>
<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>X</p>	<p>X</p>	<p>whereupon the communication device, is interconnected to a product equipped to receive signals from or send signals to lock or unlock doors, activate or deactivate security systems, activate or deactivate multi-sensor detection systems, or to activate or deactivate cell phone detection systems</p>

<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	X	<p>a transmitter for transmitting signals and messages to a cell phone detection device; a receiver for receiving signals from the cell phone detection device;</p>	<p>wherein at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection... short range radio frequency (RF) connection is capable of signal communication with the transmitter and the receiver of the communication device and transceivers of the products;</p>
<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	X	<p>whereupon a signal sent to the receiver of the cell phone detection device from at least one of the chemical sensor, the biological sensor, the explosive sensor, the human sensor, the contraband sensor, or the radiological sensor, causes a signal that includes at least one of location data or sensor data to be sent to the cell phone.</p>	X

Exhibit F

**CLAIM CHART FOR THE SMARTPHONE COMPARISON BETWEEN
THE GOOGLE PIXEL 5 AND LG V60 ThinQ 5G. THE GOOGLE PIXEL 5
SPECIFICATIONS AND THE PATENT CLAIMS' LIMITATIONS FOR
THE '287, '439, & '189 PATENTS ARE THE SAME AS IN *LARRY
GOLDEN v. GOOGLE LLC*; CAFC CASE NO. 22-1267**

Google Pixel 5 Smartphone	LG V60 ThinQ 5G	Patent #: 10,163,287; Independent Claim 5	Patent #: 9,589,439; Independent Claim 23	Patent #: 9,096,189; Independent Claim 1
		<p>A monitoring device, comprising:</p>	<p>A cell phone comprising:</p>	<p>A communication device of at least one of a cell phone, a smart phone, a desktop, a handheld, a PDA, a laptop, or a computer terminal for monitoring products, interconnected to a product for communication therebetween, comprising:</p>
<p>CPU: Octa-core (1 × 2.4 GHz Kryo 475 Prime & 1 × 2.2 GHz Kryo 475 Gold & 6 × 1.8 GHz Kryo 475 Silver) System-on-a-chip: Qualcomm Snapdragon 765G</p>	<p>Chipset: Qualcomm SM8250 Snapdragon 865 5G (7 nm+). CPU: Octa-core (1x2.84 GHz Cortex-A77 & 3x2.42 GHz Cortex-A77 & 4x1.80 GHz Cortex-A55). OS: Google Android 10, upgradable to Android 13 Modem: Qualcomm's Snapdragon X55 5G modem</p>	<p>at least one central processing unit (CPU);</p>	<p>a central processing unit (CPU) for executing and carrying out the instructions of a computer program;</p>	<p>at least one of a central processing unit (CPU) for executing and carrying out the instructions of a computer program, a network processor which is specifically targeted at the networking application domain, or a front-end processor for communication between a host computer and other devices;</p>

<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures. Monitoring air temperatures.</p>	<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures</p>	<p>at least one temperature sensor in communication with the at least one CPU for monitoring temperature;</p>	<p>X</p>	<p>X</p>
<p>Gravity sensor supported by the Android platform. Measures the force of gravity in m/s² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).</p>	<p>Gravity sensor supported by the Android platform. Measures the force of gravity in m/s² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).</p>	<p>at least one motion sensor in communication with the at least one CPU;</p>	<p>X</p>	<p>X</p>
<p>Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6-inch flexible OLED display at 432 ppi</p>	<p>Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6.8 inches, 109.8 cm² OLED display at 395 ppi density</p>	<p>at least one viewing screen for monitoring in communication with the at least one CPU;</p>	<p>X</p>	<p>X</p>

Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct, DLNA. Bluetooth 5.1, A2DP, LE, aptX HD. NFC, GPS, GPS, GLONASS, Galileo, BDS. Single SIM (Nano-SIM) or Hybrid Dual SIM (Nano-SIM, dual stand-by)	at least one global positioning system (GPS) connection in communication with the at least one CPU;	at least one of a satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long range radio frequency (RF) connection, short range radio frequency (RF) connection, or GPS connection;	at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long and short-range radio frequency (RF) connection, or GPS connection;
Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct, DLNA. Bluetooth 5.1, A2DP, LE, aptX HD. NFC, GPS, GPS, GLONASS, Galileo, BDS. Single SIM (Nano-SIM) or Hybrid Dual SIM (Nano-SIM, dual stand-by)	at least one of an internet connection or a Wi-Fi connection in communication with the at least one CPU;	wherein at least one of... WiFi connection, internet connection, radio frequency (RF) connection, cellular connection... capable of signal communication with the transmitter or the receiver;	wherein the only type or types of communication with the transmitter and the receiver of the communication device and transceivers of the products is a type or types selected from the group... of satellite, Bluetooth, WiFi...
Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct, DLNA. Bluetooth 5.1, A2DP, LE, aptX HD. NFC, GPS, GPS, GLONASS, Galileo, BDS. Single SIM (Nano-SIM) or Hybrid Dual SIM (Nano-SIM, dual stand-by)	at least one of a Bluetooth connection, a cellular connection, or a satellite connection in communication with the at least one CPU;	at least one of a... Bluetooth connection, WiFi connection, internet connection... cellular connection... short range radio frequency (RF) connection, or GPS connection;	X

<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen.</p> <p>To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen.</p> <p>To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	<p>at least one locking mechanism in communication with the at least one CPU for locking the communication device, the at least one locking mechanism configured to at least one of engage (lock) the communication device, disengage (unlock) the communication device, or disable (make unavailable) the communication device;</p>	<p>whereupon the cell phone is interconnected to the cell phone detection device to receive signals or send signals to lock or unlock doors, to activate or deactivate security systems, to activate or deactivate multi-sensor detection systems, or to activate or deactivate the cell phone detection device;</p>	X
<p>Pixel phones use USB-C with USB 2.0 power adapters and cables. To charge your phone with a USB-A power adapter, use a USB-C to USB-A cable.</p>	<p>UrbanX USB-C to USB 3.1 Adapter, USB-C Male to USB-A Female, Uses USB OTG Technology, Compatible with LG V60 ThinQ 5G</p>	<p>at least one power source comprising at least one of a battery, electrical connection, or wireless connection, to provide power to the communication device;</p>	X	X

<p>BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).</p>	<p>BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).</p>	<p>at least one biometric sensor in communication with the at least once CPU for providing biometric authentication to access the communication device;</p>	<p>wherein the cell phone is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan, or signature such that the cell phone is locked by the biometric lock disabler to prevent unauthorized use; and</p>	<p>wherein the communication device is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan and signature such that the communication device that is at least one of the cell phone, the smart phone, the desktop, the handheld, the PDA, the laptop or the computer terminal is locked by the biometric lock disabler to prevent unauthorized use</p>
<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents</p>	<p>at least one sensor for chemical, biological, or human detection in communication with the at least one CPU;</p>	<p>the cell phone is at least a fixed, portable or mobile communication device interconnected to the cell phone detection device, capable of wired or wireless communication therebetween; and</p>	<p>the communication device is at least a fixed, portable or mobile communication device interconnected to a fixed, portable or mobile product, capable of wired or wireless communication therebetween...</p>



<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p>one or more detectors in communication with the at least one CPU for detecting at least one of chemical, biological, radiological, or explosive agents;</p>	<p>at least one of a chemical sensor, a biological sensor, an explosive sensor, a human sensor, a contraband sensor, or a radiological sensor capable of being disposed within, on, upon or adjacent the cell phone;</p>	<p>wherein the communication device receives a signal via any of one or more products listed in any of the plurality of product grouping categories;</p>
<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6, dual-band, Wi-Fi Direct, DLNA. Bluetooth 5.1, A2DP, LE, aptX HD. NFC, GPS, GPS, GLONASS, Galileo, BDS. Single SIM (Nano-SIM) or Hybrid Dual SIM (Nano-SIM, dual stand-by)</p>	<p>at least one radio-frequency near-field communication (NFC) connection in communication with the at least one CPU...</p>	<p>X</p>	<p>X</p>

<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>at least one of a transmitter or a transceiver in communication with the at least one CPU configured to send signals to monitor at least one of a door, a vehicle, or a building, send signals to lock or unlock doors, send signals to control components of a vehicle, send signals to control components of a building, or... detect at least one of a chemical biological... agent such that the communication device is capable of communicating, monitoring, detecting, and controlling.</p>	<p>a transmitter for transmitting signals and messages to a cell phone detection device; a receiver for receiving signals from the cell phone detection device;</p>	<p>a transmitter for transmitting signals and messages to at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p> <p>a receiver for receiving signals, data or messages from at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p>
<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>X</p>	<p>X</p>	<p>whereupon the communication device, is interconnected to a product equipped to receive signals from or send signals to lock or unlock doors, activate or deactivate security systems, activate or deactivate multi-sensor detection systems, or to activate or deactivate cell phone detection systems</p>

<p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</i></p>	<p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</i></p>	X	<p>a transmitter for transmitting signals and messages to a cell phone detection device; a receiver for receiving signals from the cell phone detection device;</p>	<p>wherein at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection... short range radio frequency (RF) connection is capable of signal communication with the transmitter and the receiver of the communication device and transceivers of the products;</p>
<p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</i></p>	<p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</i></p>	X	<p>whereupon a signal sent to the receiver of the cell phone detection device from at least one of the chemical sensor, the biological sensor, the explosive sensor, the human sensor, the contraband sensor, or the radiological sensor, causes a signal that includes at least one of location data or sensor data to be sent to the cell phone.</p>	X

Exhibit G

CLAIM CHART FOR THE SMARTPHONE COMPARISON BETWEEN THE GOOGLE PIXEL 5 AND THE ASUS / QUALCOMM. THE GOOGLE PIXEL 5 SPECIFICATIONS AND THE PATENT CLAIMS' LIMITATIONS FOR THE '287, '439, & '189 PATENTS ARE THE SAME AS IN *LARRY GOLDEN v. GOOGLE LLC*; CAFC CASE NO. 22-1267

Google Pixel 5 Smartphone	Asus / Qualcomm Smartphone for Snapdragon Insiders	Patent #: 10,163,287; Independent Claim 5	Patent #: 9,589,439; Independent Claim 23	Patent #: 9,096,189; Independent Claim 1
		A monitoring device, comprising:	A cell phone comprising:	A communication device of at least one of a cell phone, a smart phone, a desktop, a handheld, a PDA, a laptop, or a computer terminal for monitoring products, interconnected to a product for communication therebetween, comprising:
<p>CPU: Octa-core (1 × 2.4 GHz Kryo 475 Prime & 1 × 2.2 GHz Kryo 475 Gold & 6 × 1.8 GHz Kryo 475 Silver) System-on-a-chip: Qualcomm Snapdragon 765G</p>	<p>Chipset: Qualcomm SM8350 Snapdragon 888 5G (5 nm) CPU: Octa-core (1x2.84 GHz Cortex-X1 & 3x2.42 GHz Cortex-A78 & 4x1.80 GHz Cortex-A55). OS: Google Android 11. Modem: Snapdragon® X60 5G Modem-RF System.</p>	at least one central processing unit (CPU);	a central processing unit (CPU) for executing and carrying out the instructions of a computer program;	at least one of a central processing unit (CPU) for executing and carrying out the instructions of a computer program, a network processor which is specifically targeted at the networking application domain, or a front-end processor for communication between a host computer and other devices;

<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures. Monitoring air temperatures.</p>	<p>Ambient Temperature sensor supported by the Android platform. Measures the ambient room temperature in degrees Celsius (°C). Monitoring air temperatures.</p>	<p>at least one temperature sensor in communication with the at least one CPU for monitoring temperature;</p>	<p>X</p>	<p>X</p>
<p>Gravity sensor supported by the Android platform. Measures the force of gravity in m/s² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).</p>	<p>Gravity sensor supported by the Android platform. Measures the force of gravity in m/s² that is applied to a device on all three physical axes (x, y, z). Motion detection (shake, tilt, etc.).</p>	<p>at least one motion sensor in communication with the at least one CPU;</p>	<p>X</p>	<p>X</p>
<p>Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6-inch flexible OLED display at 432 ppi</p>	<p>Light sensor supported by the Android platform. Measures the ambient light level (illumination) in lx. Controlling screen brightness. Screen: 6.78 inches, 109.5 cm² OLED display at 395 ppi density</p>	<p>at least one viewing screen for monitoring in communication with the at least one CPU;</p>	<p>X</p>	<p>X</p>

Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6e, dual-band, Wi-Fi Dir. Bluetooth: 5.2, A2DP, LE, aptX HD, aptX Adaptive. NFC, GPS, GLONASS, BDS, Galileo, QZSS, Dual SIM (Nano-SIM, dual stand-by)	at least one global positioning system (GPS) connection in communication with the at least one CPU;	at least one of a satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long range radio frequency (RF) connection, short range radio frequency (RF) connection, or GPS connection;	at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long and short-range radio frequency (RF) connection, or GPS connection;
Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6e, dual-band, Wi-Fi Dir. Bluetooth: 5.2, A2DP, LE, aptX HD, aptX Adaptive. NFC, GPS, GLONASS, BDS, Galileo, QZSS, Dual SIM (Nano-SIM, dual stand-by)	at least one of an internet connection or a Wi-Fi connection in communication with the at least one CPU;	wherein at least one of... WiFi connection, internet connection, radio frequency (RF) connection, cellular connection... capable of signal communication with the transmitter or the receiver;	wherein the only type or types of communication with the transmitter and the receiver of the communication device and transceivers of the products is a type or types selected from the group... of satellite, Bluetooth, WiFi...
Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable	Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6e, dual-band, Wi-Fi Dir. Bluetooth: 5.2, A2DP, LE, aptX HD, aptX Adaptive. NFC, GPS, GLONASS, BDS, Galileo, QZSS, Dual SIM (Nano-SIM, dual stand-by)	at least one of a Bluetooth connection, a cellular connection, or a satellite connection in communication with the at least one CPU;	at least one of a... Bluetooth connection, WiFi connection, internet connection... cellular connection... short range radio frequency (RF) connection, or GPS connection;	X

<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen.</p> <p>To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	<p>Google's Android operating system features a lock mechanism to secure your phone, known as pattern lock. To set, drag your finger along lines on the screen.</p> <p>To unlock the phone, replicate the pattern drawn. If you fail to solve the pattern too many times, the phone locks and cannot be unlocked without logging into the associated Google account.</p> <p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p>	<p>at least one locking mechanism in communication with the at least one CPU for locking the communication device, the at least one locking mechanism configured to at least one of engage (lock) the communication device, disengage (unlock) the communication device, or disable (make unavailable) the communication device;</p>	<p>whereupon the cell phone is interconnected to the cell phone detection device to receive signals or send signals to lock or unlock doors, to activate or deactivate security systems, to activate or deactivate multi-sensor detection systems, or to activate or deactivate the cell phone detection device;</p>	X
<p>Pixel phones use USB-C with USB 2.0 power adapters and cables. To charge your phone with a USB-A power adapter, use a USB-C to USB-A cable.</p>	<p>ASUS / Qualcomm Smartphone for Snapdragon Insiders Dual Port 32GB USB Type C Memory Stick; 32GB USB Type-C flash drive; Features USB Type-C connector and a traditional USB connector.</p>	<p>at least one power source comprising at least one of a battery, electrical connection, or wireless connection, to provide power to the communication device;</p>	X	X

<p>BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).</p>	<p>BIOMETRICS: Biometric factors allow for secure authentication on the Android platform. The Android framework includes face and fingerprint biometric authentication. Android can be customized to support other forms of biometric authentication (such as Iris).</p>	<p>at least one biometric sensor in communication with the at least once CPU for providing biometric authentication to access the communication device;</p>	<p>wherein the cell phone is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan, or signature such that the cell phone is locked by the biometric lock disabler to prevent unauthorized use; and</p>	<p>wherein the communication device is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan and signature such that the communication device that is at least one of the cell phone, the smart phone, the desktop, the handheld, the PDA, the laptop or the computer terminal is locked by the biometric lock disabler to prevent unauthorized use</p>
<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents</p>	<p>at least one sensor for chemical, biological, or human detection in communication with the at least one CPU;</p>	<p>the cell phone is at least a fixed, portable or mobile communication device interconnected to the cell phone detection device, capable of wired or wireless communication therebetween; and</p>	<p>the communication device is at least a fixed, portable or mobile communication device interconnected to a fixed, portable or mobile product, capable of wired or wireless communication therebetween...</p>

<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p>one or more detectors in communication with the at least one CPU for detecting at least one of chemical, biological, radiological, or explosive agents;</p>	<p>at least one of a chemical sensor, a biological sensor, an explosive sensor, a human sensor, a contraband sensor, or a radiological sensor capable of being disposed within, on, upon or adjacent the cell phone;</p>	<p>wherein the communication device receives a signal via any of one or more products listed in any of the plurality of product grouping categories;</p>
<p>Connectivity: Wi-Fi 5 (a/b/g/n/ac) 2.4 + 5.0 GHz, Bluetooth 5.0 + LE, NFC, GPS (GLONASS, Galileo, BeiDou), eSIM capable</p>	<p>Connectivity: Wi-Fi 802.11 a/b/g/n/ac/6e, dual-band, Wi-Fi Dir. Bluetooth: 5.2, A2DP, LE, aptX HD, aptX Adaptive. NFC, GPS, GLONASS, BDS, Galileo, QZSS, Dual SIM (Nano-SIM, dual stand-by)</p>	<p>at least one radio-frequency near-field communication (NFC) connection in communication with the at least one CPU...</p>	<p>X</p>	<p>X</p>

<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>at least one of a transmitter or a transceiver in communication with the at least one CPU configured to send signals to monitor at least one of a door, a vehicle, or a building, send signals to lock or unlock doors, send signals to control components of a vehicle, send signals to control components of a building, or... detect at least one of a chemical biological... agent such that the communication device is capable of communicating, monitoring, detecting, and controlling.</p>	<p>a transmitter for transmitting signals and messages to a cell phone detection device; a receiver for receiving signals from the cell phone detection device;</p>	<p>a transmitter for transmitting signals and messages to at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p> <p>a receiver for receiving signals, data or messages from at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p>
<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>Google Nest × Yale Lock is connected to the Nest app; you can lock or unlock your door from your phone.</p> <p><i>Android Team Awareness Kit, ATAK (built on the Android operating system) provides a single interface for viewing and controlling different CBRN-sensing technologies</i></p>	<p>X</p>	<p>X</p>	<p>whereupon the communication device, is interconnected to a product equipped to receive signals from or send signals to lock or unlock doors, activate or deactivate security systems, activate or deactivate multi-sensor detection systems, or to activate or deactivate cell phone detection systems</p>


<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	X	<p>a transmitter for transmitting signals and messages to a cell phone detection device; a receiver for receiving signals from the cell phone detection device;</p>	<p>wherein at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection... short range radio frequency (RF) connection is capable of signal communication with the transmitter and the receiver of the communication device and transceivers of the products;</p>
<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	<p><i>Android Team Awareness Kit</i>, ATAK (built on the Android operating system) is a digital application available to warfighters throughout the DoD. ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. With DTRA's contribution, ATAK now includes chemical, biological, radiological, and nuclear (CBRN) plug-ins.</p>	X	<p>whereupon a signal sent to the receiver of the cell phone detection device from at least one of the chemical sensor, the biological sensor, the explosive sensor, the human sensor, the contraband sensor, or the radiological sensor, causes a signal that includes at least one of location data or sensor data to be sent to the cell phone.</p>	X

Exhibit H

PLAINTIFF’S ILLUSTRATIVE CLAIM CHART FOR PATENT INFRINGEMENT

Below, is an illustrative claim chart of how the Samsung Galaxy Book2 Pro 360 PC / Tablet directly infringes claim 5 of Plaintiff’s ‘287 patent, and claim 1 of Plaintiff’s ‘189 patent.

Also, the chart illustrates how Intel® Core™ i5-1235U / Intel® Core™ i7-1255U CPU contributes to the infringement of the Samsung Galaxy Book2 Pro 360 PC / Tablet, and has “no substantial non-infringing use”. Plaintiff’s CPU is referenced in 12 limitations of claim 5 of Plaintiff’s ‘287 patent. Every claim limitation is covered.

Samsung Galaxy Book2 Pro 360 [PC Mode or Tablet Mode]	Patent #: 10,163,287; Indep. Claim 5	Patent #: 9,096,189; Independent Claim 1
 <p>This “<i>doctrine of equivalent</i>” element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claim.</p>	<p>A monitoring device, comprising:</p>	<p>A communication device of at least one of a cell phone, a smart phone, a desktop, a handheld, a PDA, a laptop, or a computer terminal for monitoring products, interconnected to a product for communication therebetween, comprising:</p>
<p>CPU: Intel® Core™ i5-1235U / Intel® Core™ i7-1255U. Processor Speed 1.3GHz / 1.7 GHz. Clock 900 - 4400 MHz / 1200 - 4700 MHz. L1 Cache 928 KB / 928 KB. Cores 10 / 10. Threads 12 / 12. Preinstalled Operating System Windows 11 Home</p> <p>This “<i>doctrine of equivalent</i>” element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claims.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	<p>at least one central processing unit (CPU);</p>	<p>at least one of a central processing unit (CPU) for executing and carrying out the instructions of a computer program, a network processor which is specifically targeted at the networking application domain, or a front-end processor for communication between a host computer and other devices;</p>

<p>Technical Specifications: CPU Temperature Sensor reached 99° C. Surface temperature: W,A,S,D Keys - 42.1 °C, Keyboard Middle - 44.1 °C, Palm Rest - 37.0 °C</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	<p>at least one temperature sensor in communication with the at least one CPU for monitoring temperature;</p>	<p>X</p>
<p>With the infrared sensor the device can detect motion by measuring the infrared (IR) light radiating from objects in its field of view</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	<p>at least one motion sensor in communication with the at least one CPU;</p>	<p>X</p>
<p>Available in two screen sizes (13.3” and 15.6”). Plus, the screen automatically adapts to any lighting environment, so it’s easy on the eyes, thanks to a 1MM:1 contrast ratio</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	<p>at least one viewing screen for monitoring in communication with the at least one CPU;</p>	<p>X</p>
<p>GPS: If you turn on satellite-based GPS, your tablet can find your exact position. Microsoft Windows 11 has added a location services feature that uses IP addresses and Wi-Fi positioning to predict your location.</p> <p>This “<i>doctrine of equivalents</i>” element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claim.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	<p>at least one global positioning system (GPS) connection in communication with the at least one CPU;</p>	<p>at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long and short-range radio frequency (RF) connection, or GPS connection;</p>

<p>High speed internet and Microsoft account required for Windows 11 Home and Windows 11 Pro. Networking: 802.11ax (Wi-Fi 6E), Bluetooth Standard: Bluetooth 5.0</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	<p>at least one of an internet connection or a Wi-Fi connection in communication with the at least one CPU;</p>	<p>wherein the only type or types of communication with the transmitter and the receiver of the communication device and transceivers of the products is a type or types selected from the group... of satellite, Bluetooth, WiFi...</p>
<p>Networking: Bluetooth Standard: Bluetooth 5.0. 802.11ax (Wi-Fi 6E),</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	<p>at least one of a Bluetooth connection, a cellular connection, or a satellite connection in communication with the at least one CPU;</p>	<p>X</p>
<p>Galaxy Book2 Pro 360 Specs: The Galaxy Book2 Pro keyboard has an NFC connection spot. Tapped the Galaxy phone on the spot to make contact; then used the Samsung Flow phone software to lock and unlock the tablet using the phone's fingerprint scanner.</p> <p>Windows Hello face authentication utilizes a camera specially configured for near infrared (IR) imaging to authenticate and unlock.</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	<p>at least one locking mechanism in communication with the at least one CPU for locking the communication device, the at least one locking mechanism configured to at least one of engage (lock) the communication device, disengage (unlock) the communication device, or disable (make unavailable) the communication device;</p>	<p>X</p>

<p>Samsung's Super-Fast Charging-enabled 65W AC adapter in the box. It can deliver "8 hours" of battery life in just 30 minutes of charging. The Galaxy Book2 Pro 360 averaged around 10 hours 30 minutes on a full charge.</p> <p>Literal Infringement: When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p>Contributory infringement: The CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360 and is capable of carrying out the functional and operational instructions of the PC.</p>	<p>at least one power source comprising at least one of a battery, electrical connection, or wireless connection, to provide power to the communication device;</p>	<p>X</p>
<p>Samsung's Biometric Sensors. Fingerprint Reader. Windows Hello face authentication utilizes a camera specially configured for near infrared (IR) imaging to authenticate and unlock.</p> <p>Literal Infringement: When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	<p>at least one biometric sensor in communication with the at least once CPU for providing biometric authentication to access the communication device;</p>	<p>wherein the communication device is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan and signature such that the communication device that is at least one of the cell phone, the smart phone, the desktop, the handheld, the PDA, the laptop or the computer terminal is locked by the biometric lock disabler to prevent unauthorized use</p>
<p>Intel's Loihi Neuromorphic Chip to Learn and Recognize the Scents of 10 Hazardous Chemicals compatible with the Galaxy Book2 Pro 360</p> <p>This "<i>doctrine of equivalent</i>" element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claim.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p> <p>Induced infringement: requires not 'only knowledge of the patent' but also 'proof the defendant knew the [induced] acts were infringing.'" <i>DSU Med. Corp. v. JMS Co.</i>, 471 F.3d 1293, 1305 (Fed. Cir. 2006) Notice to Appear sent to Samsung in <i>Golden v. USA</i> Case 13-307C</p>	<p>at least one sensor for chemical, biological, or human detection in communication with the at least one CPU;</p>	<p>the communication device is at least a fixed, portable or mobile communication device interconnected to a fixed, portable or mobile product, capable of wired or wireless communication therebetween...</p>

<p>Intel's Loihi Neuromorphic Chip to Learn and Recognize the Scents of 10 Hazardous Chemicals compatible with the Galaxy Book2 Pro 360</p> <p>This “<i>doctrine of equivalent</i>” element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claim.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p> <p>Induced infringement: requires not ‘only knowledge of the patent’ but also ‘proof the defendant knew the [induced] acts were infringing.’” <i>DSU Med. Corp. v. JMS Co.</i>, 471 F.3d 1293, 1305 (Fed. Cir. 2006) Notice to Appear sent to Samsung in <i>Golden v. USA</i> Case 13-307C</p>	<p>one or more detectors in communication with the at least one CPU for detecting at least one of chemical, biological, radiological, or explosive agents;</p>	<p>wherein the communication device receives a signal via any of one or more products listed in any of the plurality of product grouping categories;</p>
<p>The Galaxy Book2 Pro keyboard has a Near Field Communications (NFC) connection spot. Briefly tapped the Galaxy phone on the spot to make contact</p> <p>Literal Infringement: When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	<p>at least one radio-frequency near-field communication (NFC) connection in communication with the at least one CPU...</p>	<p>X</p>
<p>Intel's Loihi Neuromorphic Chip to Learn and Recognize the Scents of 10 Hazardous Chemicals compatible with the Galaxy Book2 Pro 360</p> <p>Literal Infringement: When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p> <p>Induced infringement: requires not ‘only knowledge of the patent’ but also ‘proof the defendant knew the [induced] acts were infringing.’” <i>DSU Med. Corp. v. JMS Co.</i>, 471 F.3d 1293, 1305 (Fed. Cir. 2006). Notice to Appear sent to Samsung in <i>Golden v. USA</i> Case 13-307C</p>	<p>at least one of a transmitter or a transceiver in communication with the at least one CPU configured to send signals to monitor at least one of a door, a vehicle, or a building... or... detect at least one of a chemical biological... agent such that the communication device is capable of communicating, monitoring, detecting, and controlling.</p>	<p>a transmitter for transmitting signals and messages to at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p> <p>a receiver for receiving signals, data or messages from at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p>

<p>The Galaxy Book2 Pro keyboard has a Near Field Communications (NFC) connection spot. Briefly tapped the Galaxy phone on the spot to make contact; then used the Samsung Flow phone software to lock and unlock the Galaxy Book2 Pro tablet using the phone's fingerprint scanner from across the room.</p> <p>Intel's Loihi Neuromorphic Chip to Learn and Recognize the Scents of 10 Hazardous Chemicals compatible with the Galaxy Book2 Pro 360</p> <p>This "<i>doctrine of equivalent</i>" element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claim.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	X	<p>whereupon the communication device, is interconnected to a product equipped to receive signals from or send signals to lock or unlock doors, activate or deactivate security systems, activate or deactivate multi-sensor detection systems, or to activate or deactivate cell phone detection systems</p>
<p>High speed internet and Microsoft account required for Windows 11 Home and Windows 11 Pro. Networking: 802.11ax (Wi-Fi 6E), Bluetooth Standard: Bluetooth 5.0</p> <p>Literal Infringement: When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing Galaxy Book2 Pro 360</p>	X	<p>wherein at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection... short range radio frequency (RF) connection is capable of signal communication with the transmitter and the receiver of the communication device and transceivers of the products;</p>

Intel contributed to the infringement of Plaintiff's patented new and improved upon PC

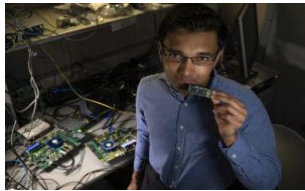
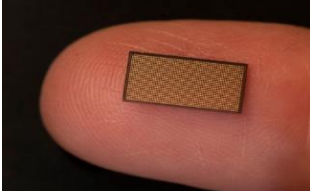

<p>Intel's Loihi Neuromorphic Chip to Learn and Recognize the Scents of 10 Hazardous Chemicals. Below: Intel Labs' Nabil Imam holds a Loihi neuromorphic chip in his Santa Clara, California, neuromorphic computing lab. (Walden Kirsch/Intel Corp)</p>	
<p>Intel and Cornell trained Intel's Loihi neuromorphic chip to learn and recognize the scents of 10 hazardous chemicals ... the activity of 72 chemical sensors in response to these smells and configured the circuit diagram of biological olfaction on Loihi. The chip quickly learned the neural representation of each of the smells and each odor.</p>	 <p>Intel's Loihi 2 Neuromorphic Chip</p>

Exhibit I

PLAINTIFF’S ILLUSTRATIVE CLAIM CHART FOR PATENT INFRINGEMENT

Below, is an illustrative claim chart of how the HP ZBook PC directly infringes claim 5 of Plaintiff’s ‘287 patent, and claim 1 of Plaintiff’s ‘189 patent.

Also, the chart illustrates how Intel’s 11th Generation Intel® Xeon® W-11955M vPro® CPU contributes to the infringement of the HP ZBook PC, and has “no substantial non-infringing use”. Plaintiff’s CPU is referenced in 12 limitations of claim 5 of Plaintiff’s ‘287 patent. Every claim limitation is covered.

HP ZBook Fury 15.6 Inch G8 Mobile Workstation PC	Patent #: 10,163,287; Indep. Claim 5	Patent #: 9,096,189; Independent Claim 1
 <p>This “<i>doctrine of equivalent</i>” element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claim.</p>	<p>A monitoring device, comprising:</p>	<p>A communication device of at least one of a cell phone, a smart phone, a desktop, a handheld, a PDA, a laptop, or a computer terminal for monitoring products, interconnected to a product for communication therebetween, comprising:</p>
<p>CPU: 11th Generation Intel® Xeon® W-11955M vPro® with Intel® UHD Graphics (2.6 GHz base frequency, up to 5.0 GHz with Intel® Turbo Boost Technology, 24 MB cache, 8 cores; 16 threads). Preinstalled operating system - Windows 11 Pro2</p> <p>This “<i>doctrine of equivalent</i>” element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claims.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	<p>at least one central processing unit (CPU);</p>	<p>at least one of a central processing unit (CPU) for executing and carrying out the instructions of a computer program, a network processor which is specifically targeted at the networking application domain, or a front-end processor for communication between a host computer and other devices;</p>

<p>Technical Specifications Temperature Sensor— Operating is 14° to 158° F (-10° to 70° C).</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	<p>at least one temperature sensor in communication with the at least one CPU for monitoring temperature;</p>	<p>X</p>
<p>HP CoolSense Technology uses a motion sensor to sense when the computer is being used in a stationary or mobile setting</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	<p>at least one motion sensor in communication with the at least one CPU;</p>	<p>X</p>
<p>15.6" diagonal UHD (3840 x 2160) IPS eDP1.4 + PSR2 WLED-backlit touch screen with Corning® Gorilla® Glass 5</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	<p>at least one viewing screen for monitoring in communication with the at least one CPU;</p>	<p>X</p>
<p>GPS: Standalone, A-GPS (MS-A, MS-B). GPS Bands: 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	<p>at least one global positioning system (GPS) connection in communication with the at least one CPU;</p>	<p>at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection, long and short-range radio frequency (RF) connection, or GPS connection;</p>

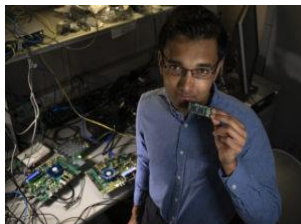
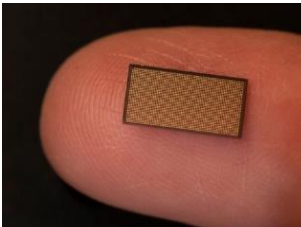
<p>High speed internet and Microsoft account required for Windows 11 Pro and Windows 11 Pro for Business</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	<p>at least one of an internet connection or a Wi-Fi connection in communication with the at least one CPU;</p>	<p>wherein the only type or types of communication with the transmitter and the receiver of the communication device and transceivers of the products is a type or types selected from the group... of satellite, Bluetooth, WiFi...</p>
<p>WLAN: Intel® Wi-Fi 6 AX201 (2x2) and Bluetooth® 5.2 wireless card, vPro™</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	<p>at least one of a Bluetooth connection, a cellular connection, or a satellite connection in communication with the at least one CPU;</p>	<p>X</p>
<p>HP ZBook PC Specs: HP Tamper Lock. Nano Security Lock. Windows Hello face authentication utilizes a camera specially configured for near infrared (IR) imaging to authenticate and unlock.</p> <p><i>Literal Infringement:</i> When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p><i>Contributory infringement:</i> This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	<p>at least one locking mechanism in communication with the at least one CPU for locking the communication device, the at least one locking mechanism configured to at least one of engage (lock) the communication device, disengage (unlock) the communication device, or disable (make unavailable) the communication device;</p>	<p>X</p>

<p>HP chipset requires a Windows operating system, network hardware and software, connection with a power source, and a direct corporate network connection which is either cable or wireless LAN.</p> <p>Literal Infringement: When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p>Contributory infringement: The CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC and is capable of carrying out the functional and operational instructions of the PC.</p>	<p>at least one power source comprising at least one of a battery, electrical connection, or wireless connection, to provide power to the communication device;</p>	<p>X</p>
<p>HP Fingerprint Sensor. Windows Hello face authentication utilizes a camera specially configured for near infrared (IR) imaging to authenticate and unlock.</p> <p>Literal Infringement: When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	<p>at least one biometric sensor in communication with the at least once CPU for providing biometric authentication to access the communication device;</p>	<p>wherein the communication device is equipped with a biometric lock disabler that incorporates at least one of a fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan and signature such that the communication device that is at least one of the cell phone, the smart phone, the desktop, the handheld, the PDA, the laptop or the computer terminal is locked by the biometric lock disabler to prevent unauthorized use</p>
<p>Intel's Loihi Neuromorphic Chip to Learn and Recognize the Scents of 10 Hazardous Chemicals compatible with the HP ZBook PC</p> <p>This "doctrine of equivalent" element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claim.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p> <p>Induced infringement: requires not 'only knowledge of the patent' but also 'proof the defendant knew the [induced] acts were infringing.'" <i>DSU Med. Corp. v. JMS Co.</i>, 471 F.3d 1293, 1305 (Fed. Cir. 2006)</p>	<p>at least one sensor for chemical, biological, or human detection in communication with the at least one CPU;</p>	<p>the communication device is at least a fixed, portable or mobile communication device interconnected to a fixed, portable or mobile product, capable of wired or wireless communication therebetween...</p>

<p>Intel's Loihi Neuromorphic Chip to Learn and Recognize the Scents of 10 Hazardous Chemicals compatible with the HP ZBook PC</p> <p>This “<i>doctrine of equivalent</i>” element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claim.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p> <p>Induced infringement: requires not ‘only knowledge of the patent’ but also ‘proof the defendant knew the [induced] acts were infringing.’” <i>DSU Med. Corp. v. JMS Co.</i>, 471 F.3d 1293, 1305 (Fed. Cir. 2006)</p>	<p>one or more detectors in communication with the at least one CPU for detecting at least one of chemical, biological, radiological, or explosive agents;</p>	<p>wherein the communication device receives a signal via any of one or more products listed in any of the plurality of product grouping categories;</p>
<p>Near Field Communication (NFC) module. NFC RF standards ISO/IEC 14443 A</p> <p>Literal Infringement: When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	<p>at least one radio-frequency near-field communication (NFC) connection in communication with the at least one CPU...</p>	<p>X</p>
<p>Intel's Loihi Neuromorphic Chip to Learn and Recognize the Scents of 10 Hazardous Chemicals compatible with the HP ZBook PC</p> <p>Literal Infringement: When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p> <p>Induced infringement: requires not ‘only knowledge of the patent’ but also ‘proof the defendant knew the [induced] acts were infringing.’” <i>DSU Med. Corp. v. JMS Co.</i>, 471 F.3d 1293, 1305 (Fed. Cir. 2006)</p>	<p>at least one of a transmitter or a transceiver in communication with the at least one CPU configured to send signals to monitor at least one of a door, a vehicle, or a building... or... detect at least one of a chemical biological... agent such that the communication device is capable of communicating, monitoring, detecting, and controlling.</p>	<p>a transmitter for transmitting signals and messages to at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p> <p>a receiver for receiving signals, data or messages from at least one of plurality product groups based on the categories of a multi-sensor detection device, a maritime cargo container, a cell phone detection device, or a locking device;</p>

<p>HP ZBook PC Specs: HP Tamper Lock. Nano Security Lock.</p> <p>Intel's Loihi Neuromorphic Chip to Learn and Recognize the Scents of 10 Hazardous Chemicals compatible with the HP ZBook PC</p> <p>This "<i>doctrine of equivalent</i>" element performs substantially the same function; in substantially the same way; and, produces substantially the same result, as the element as expressed in the claim.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	X	<p>whereupon the communication device, is interconnected to a product equipped to receive signals from or send signals to lock or unlock doors, activate or deactivate security systems, activate or deactivate multi-sensor detection systems, or to activate or deactivate cell phone detection systems</p>
<p>High speed internet and Microsoft account required for Windows 11 Pro and Windows 11 Pro for Business. WLAN: Intel® Wi-Fi 6 AX201 (2x2) and Bluetooth® 5.2 wireless card, vPro™</p> <p>Literal Infringement: When there is a direct correspondence between the words in the patent claims and the infringing product or device or technology.</p> <p>Contributory infringement: This CPU element, provided by Intel, is a material component of the allegedly infringing HP ZBook PC</p>	X	<p>wherein at least one satellite connection, Bluetooth connection, WiFi connection, internet connection, radio frequency (RF) connection, cellular connection, broadband connection... short range radio frequency (RF) connection is capable of signal communication with the transmitter and the receiver of the communication device and transceivers of the products;</p>

Intel contributed to the infringement of Plaintiff's patented new and improved upon PC

<p>Intel's Loihi Neuromorphic Chip to Learn and Recognize the Scents of 10 Hazardous Chemicals. Below: Intel Labs' Nabil Imam holds a Loihi neuromorphic chip in his Santa Clara, California, neuromorphic computing lab. (Walden Kirsch/Intel Corp)</p>	
<p>Intel and Cornell trained Intel's Loihi neuromorphic chip to learn and recognize the scents of 10 hazardous chemicals ... the activity of 72 chemical sensors in response to these smells and configured the circuit diagram of biological olfaction on Loihi. The chip quickly learned the neural representation of each of the smells and each odor, demonstrating a future for neuroscience and AI.</p>	 <p>Intel's Loihi 2 Neuromorphic Chip</p>

Sincerely,

s/ *Larry Golden*

Larry Golden, *Pro Se* Plaintiff

740 Woodruff Rd., #1102

Greenville, SC 29607

(H) 8642885605

(M) 8649927104

Email: atpg-tech@charter.net

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on this 19th day of June, 2023, a true and correct copy of the foregoing “Plaintiff’s Motion for Summary Judgement”, was served upon the following Defendant via email and by priority “express” mail:

Grant D. Johnson
Trial Attorney
Commercial Litigation Branch
Civil Division
Department of Justice
Washington, DC 20530
Grant.D.Johnson@usdoj.gov
(202) 305-2513

s/ *Larry Golden*

Larry Golden, Pro Se
740 Woodruff Rd., #1102
Greenville, South Carolina 29607
atpg-tech@charter.net
864-288-5605